1 Order from least to greatest.

665.55, 555.66, 665.555

_____ < _____ < _____

2 The distance between two buildings on a map is 4.0 centimeters (cm). The map uses a scale of 1 cm = 5 kilometers (km). How far apart are the buildings?

A 20 km

B 2 km

C 200 km

_____

3 Solve for the value of n.

$5n + 10 = 70$

_____

4 Fill in the missing number in this sequence.

3, 6, 9, _____, 15, 18

5

House Sales	
Year	Houses
2002	10,124
2003	12,015
2004	14,767
2005	16,290

How many more houses were sold in 2003 than in 2002? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many cartons of chocolate milk will be sold in 5 days? _____

Student: _____ Teacher: _____ Date: _____
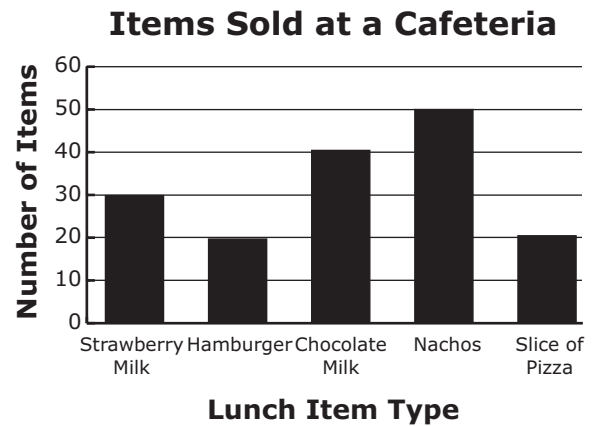
7 Solve for the value of t.

$$\frac{2+30}{t} = 4$$

_____

8 Write the correct answer as an integer in the blank.

$5^3 + 6^2 =$ _____

9 Write these numbers in increasing order.

$0.9, \frac{-9}{4}, 3.2, \frac{4}{9}, -3.1$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of an apartment are 55 centimeters (cm) by 85 cm. The blueprint uses a scale of 1 cm = 4 meters (m). What are the actual dimensions of the apartment?
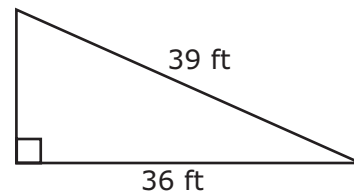
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$5^3 + 5^2 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 54.263×10^7

B 542.63×10^6

C 5.4263×10^5

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

39 ft

36 ft

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$8^2 + 2(5 - 1) - 3$

_____

15 Simplify the expression.

$3[9 - (5 - 4)2]$

_____

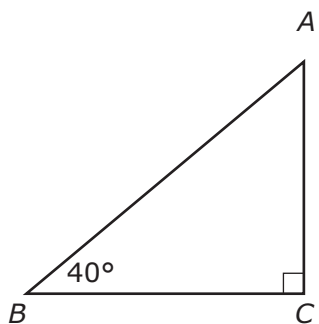**16** Solve for the value of *z*.

$$\frac{z + 5}{3} = 5$$

_____

17 A gas tank contains 35,000 gallons of gas. The tank is drained at a rate of 150 gallons per minute. Which expression represents the amount of gas in the tank after *m* minutes?

A $35,000 - 150m$

B $35,000 + 150m$

C $35,000m - 150$

_____

18 Simplify and write the answer as an integer in the blank.

$(5^3)5^2$

_____
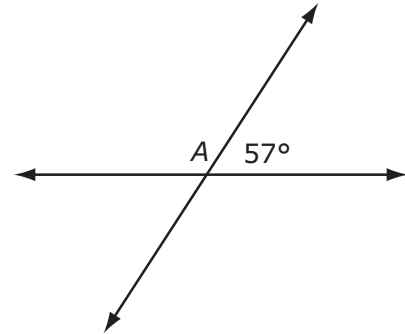
19 What is the measure of ∠A?

_____°

20 The diameter of Venus is 12,103.6 kilometers (km). What is the diameter of Venus in scientific notation?

_____ km

21 What is the measure of ∠A?

_____°

22 Write this number in scientific notation.

$83,923 = $ _____

23 An online store sells jackets for $34.45 each. For each order, there is a one-time shipping and handling fee of $13.40. Which expression represents the cost of ordering *l* jackets?

A $34.45l + 13.40$

B $(34.45 + 13.40)l$

C $l + 34.45 + 13.40$

_____

24 One leg of a right triangle is 9 units long. The hypotenuse of this triangle is 15 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$1.4 \times 10^{-2} =$ _____

26 A basket contains 20 peaches, 4 of which have bruises. Carmen takes a peach from the basket at random. What is the probability that she will take out a peach without bruises? Express the answer as a percent.

_____%

27 Jane goes to dance class every 3 days and Erika goes to the same dance class every 6 days. If they are together at the dance class on Tuesday, what is the next day they will be together at the dance class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	120
25	240
50	360
75	480
100	600

Based on the above data, which of these is the most likely to be correct?

A The temperature after 125 minutes will be 500 °C.

B The temperature after 150 minutes will be more than 840 °C.

C The temperature after 125 minutes will be higher than the temperature after 150 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 4 Answer Key

Item No.	Answer	Correct	Incorrect
1.	555.66, 665.55, 665.555	1	0
2.	A	1	0
3.	12	1	0
4.	12	1	0
5.	1891	1	0
6.	200	1	0
7.	8	1	0
8.	161	1	0
9.	$-3.1, \dfrac{-9}{4}, \dfrac{4}{9}, 0.9, 3.2$	2	0
10.	220, 340	1	0
11.	150	1	0
12.	C	1	0
13.	15	2	0
14.	69	2	0
15.	21	2	0
16.	10	1	0
17.	A	1	0
18.	3125	1	0
19.	50	2	0
20.	1.21036×10^4	2	0
21.	123	2	0
22.	8.3923×10^4	2	0
23.	A	2	0
24.	12	2	0
25.	0.014	3	0
26.	80	2	0
27.	Monday	2	0
28.	B	1	0

Total [   ]

Student: _____ Teacher: _____ Date: _____

1 Order from least to greatest.

327.09, 327.90, 327.009

_____ < _____ < _____

2 The distance between two cities on a map is 3.1 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 31 km

B 310 km

C 3100 km

_____

3 Solve for the value of *n*.

$2n + 23 = 73$

_____

4 Fill in the missing number in this sequence.

7, 10, 13, _____, 19, 22

5

Laptop Sales	
Year	Laptops
1998	18,285
1999	20,325
2000	24,631
2001	28,571

How many more laptops were sold in 2000 than in 1999? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.
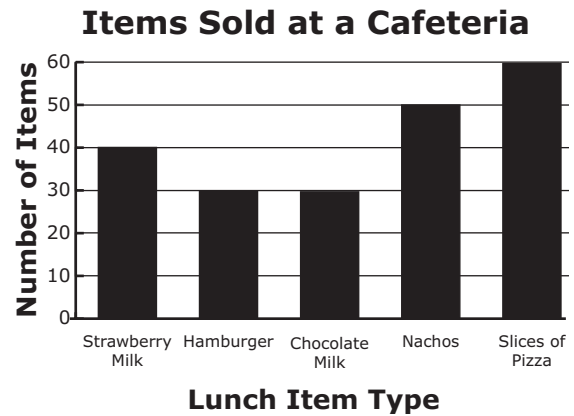
Items Sold at a Cafeteria

At this rate, how many cartons of strawberry milk will be sold in 6 days? _____

7   Solve for the value of *x*.

$$\frac{16+1}{x} = 17$$

_____

8   Write the correct answer as an integer in the blank.

$2^2 + 7^3 =$ _____

9   Write these numbers in increasing order.

$2.6, \dfrac{-7}{3}, 3.9, \dfrac{8}{9}, {-3.5}$

____ ____ ____ ____ ____

10   On a blueprint, the dimensions of a park are 25 centimeters (cm) by 30 cm. The blueprint uses a scale of 1 cm = 9 meters (m). What are the actual dimensions of the park?
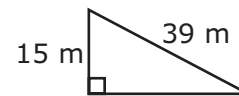
_____ m by _____ m

11   Write the correct answer as an integer in the blank.

$3^4 + 2^1 =$ _____

12   Which of these numbers is expressed properly in scientific notation?

A 144.21×10^4

B 1.4421×10^6

C 14.421×10^5

_____

13   A ramp is constructed with the given dimensions. What is the width of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14   Simplify the expression.

$2^3 + 4(2 - 1) - 1$

_____

15   Simplify the expression.

$2[2^4 - (4 - 4)9]$

_____

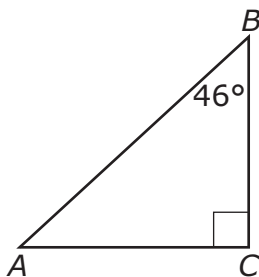**16** Solve for the value of *x*.

$$\frac{x-1}{2} = 2$$

_____

17 A swimming pool contains 29,000 gallons of water. The pool is drained at a rate of 11 gallons per minute. Which expression represents the amount of water in the pool after *x* minutes?

A $29{,}000x - 11$

B $29{,}000 + 11x$

C $29{,}000 - 11x$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^5)6^1$

_____
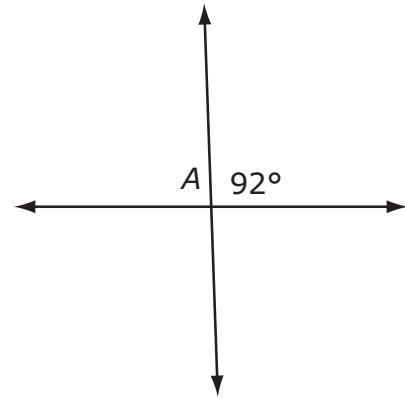
19 What is the measure of $\angle A$?

_____ °

20 The diameter of an asteroid is 214,900 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °

22 Write this number in scientific notation.

$21{,}271 = $ _____

23 An online store sells bags for $39.55 each. For each order, there is a one-time shipping and handling fee of $1.50. Which expression represents the cost of ordering *x* bags?

A $39.55x + 1.50$

B $x + 39.55 + 1.50$

C $(39.55 + 1.50)x$

_____

24 One leg of a right triangle is 40 units long and its other leg is 9 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$4.1 \times 10^{-3} =$ _____

26 A bag contains 50 balls, 10 of which are green. Justin takes a ball from the bag at random. What is the probability that he will take out a green ball? Express the answer as a percent.

_____ %

27 Jaden goes to her dance class every 10 days and Scarlett goes to the same dance class every 5 days. If they are together at the class on Saturday, what is the next day they will be together at the dance class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	30
5	40
10	50
15	60
20	70

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 60 °C.

B The temperature after 60 minutes will be 25 °C.

C The temperature after 25 minutes will be higher than the temperature after 20 minutes.

_____

Student: _____ Teacher: _____ Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 5 Answer Key

Item No.	Answer	Correct	Incorrect
1.	327.009, 327.09, 327.90	1	0
2.	B	1	0
3.	25	1	0
4.	16	1	0
5.	4306	1	0
6.	240	1	0
7.	1	1	0
8.	347	1	0
9.	$-3.5, \dfrac{-7}{3}, \dfrac{8}{9}, 2.6, 3.9$	2	0
10.	225, 270	1	0
11.	83	1	0
12.	B	1	0
13.	36	2	0
14.	11	2	0
15.	32	2	0
16.	5	1	0
17.	C	1	0
18.	192	1	0
19.	44	2	0
20.	2.149×10^5	2	0
21.	88	2	0
22.	2.1271×10^4	2	0
23.	A	2	0
24.	41	2	0
25.	0.0041	3	0
26.	20	2	0
27.	Tuesday	2	0
28.	C	1	0

Total [   ]

1 Order from least to greatest.

595.05, 595.50, 595.005

_____ < _____ < _____

2 The distance between two cities on a map is 2.9 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 290 km

B 29 km

C 2900 km

_____

3 Solve for the value of *n*.

$2n + 60 = 90$

_____

4 Fill in the missing number in this sequence.

1, 11, 21, _____, 41, 51

5

Laptop Sales	
Year	Laptops
1998	15,485
1999	16,325
2000	18,831
2001	20,171

How many more laptops were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
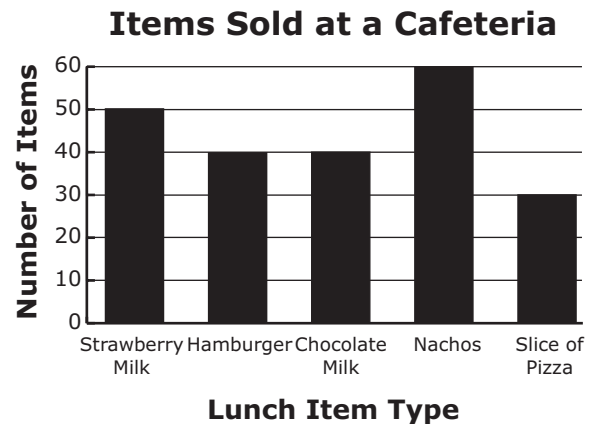
At this rate, how many slices of pizza will be sold in 5 days? _____

7 Solve for the value of x.

$$\frac{13 + 5}{x} = 6$$

_____

8 Write the correct answer as an integer in the blank.

$2^3 + 4^2 =$ _____

9 Write these numbers in increasing order.

$0.1, \dfrac{-5}{2}, 2.2, \dfrac{4}{7}, -1.1$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a park are 28 centimeters (cm) by 35 cm. The blueprint uses a scale of 1 cm = 5 meters (m). What are the actual dimensions of the park?
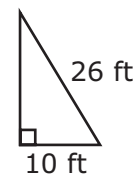
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$4^3 + 7^1 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 1.1445×10^6

B 114.45×10^4

C 11.445×10^5

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

26 ft

10 ft

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$8^2 + 2(4 - 2) - 8$

_____

15 Simplify the expression.

$2[3^4 - (3 - 2)3]$

_____

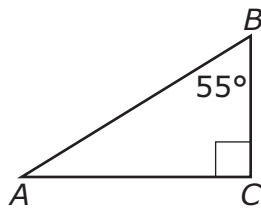**16** Solve for the value of *x*.

$$\frac{x + 4}{4} = 4$$

_____

17 A swimming pool contains 23,230 gallons of water. The pool is drained at a rate of 21 gallons per minute. Which expression represents the amount of water in the pool after *x* minutes?

A $23,230 + 21x$

B $23,230 - 21x$

C $23,230x - 21$

_____

18 Simplify and write the answer as an integer in the blank.

$(7^2)7^1$

_____

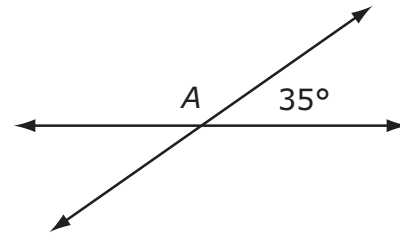**19** What is the measure of ∠A?

_____ °

20 The diameter of an asteroid is 204,700 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of ∠A?

_____ °

22 Write this number in scientific notation.

$43,248 = $ _____

23 An online store sells books for $12.55 each. For each order, there is a one-time shipping and handling fee of $3.35. Which expression represents the cost of ordering *x* books?

A $x + 12.55 + 3.35$

B $12.55x + 3.35$

C $(12.55 + 3.35)x$

_____

24 One leg of a right triangle is 24 inches (in.) long. The hypotenuse of this triangle is 26 in. long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ in.

---

25 Write the number as a decimal in standard form.

$6.8 \times 10^{-3} =$ _____

---

26 A bag contains 60 balls, 15 of which are red. Earl takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

---

27 Giana goes to music class every 2 days and Trista goes to the same music class every 6 days. If they are together at the class on Monday, what is the next day they will be together at the music class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	5
5	15
10	25
15	35
20	45

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 55 °C.

B The temperature after 30 minutes will be 25 °C.

C The temperature after 25 minutes will be higher than the temperature after 30 minutes.

_____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 6 Answer Key

Item No.	Answer	Correct	Incorrect
1.	595.005, 595.05, 595.50	1	0
2.	A	1	0
3.	15	1	0
4.	31	1	0
5.	1340	1	0
6.	150	1	0
7.	3	1	0
8.	24	1	0
9.	$\frac{-5}{2}$, −1.1, 0.1, $\frac{4}{7}$, 2.2	2	0
10.	140, 175	1	0
11.	71	1	0
12.	A	1	0
13.	24	2	0
14.	60	2	0
15.	156	2	0
16.	12	1	0
17.	B	1	0
18.	343	1	0
19.	35	2	0
20.	2.047×10^5	2	0
21.	145	2	0
22.	4.3248×10^4	2	0
23.	B	2	0
24.	10	2	0
25.	0.0068	3	0
26.	25	2	0
27.	Sunday	2	0
28.	A	1	0

Total ☐

1 Order from least to greatest.

327.09, 327.90, 327.009

_____ < _____ < _____

2 The distance between two cities on a map is 1.7 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 1700 km

B 17 km

C 170 km

_____

3 Solve for the value of *n*.

$2n + 10 = 90$

_____

4 Fill in the missing number in this sequence.

2, 5, 8, _____, 14, 17

5

Television Sales	
Year	Televisions
1998	15,185
1999	17,525
2000	21,231
2001	25,971

How many more televisions were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
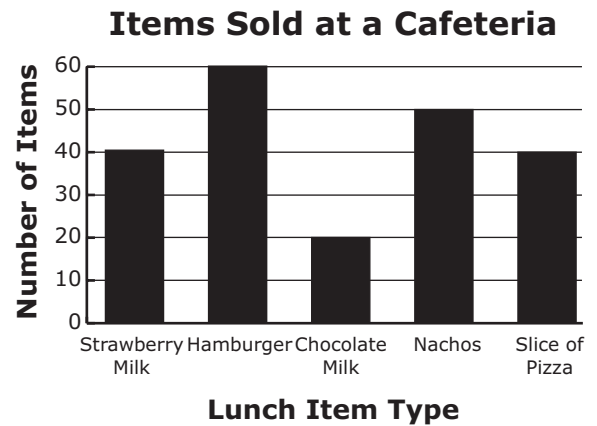
At this rate, how many slices of pizza will be sold in 4 days? _____

7 Solve for the value of x.

$$\frac{12 + 18}{x} = 5$$

_____

8 Write the correct answer as an integer in the blank.

$2^2 + 9^3 =$ _____

9 Write these numbers in increasing order.

$0.4, \dfrac{-7}{2}, 2.5, \dfrac{3}{5}, {-1.4}$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a park are 25 centimeters (cm) by 10 cm. The blueprint uses a scale of 1 cm = 7 meters (m). What are the actual dimensions of the park?

_____ m by _____ m

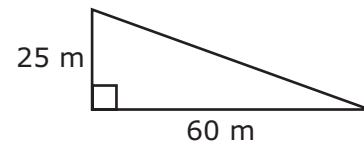**11** Write the correct answer as an integer in the blank.

$2^7 + 1^{11} =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 12.422×10^5

B 124.22×10^4

C 1.2422×10^6

_____

13 A ramp is constructed with the given dimensions. What is the length of the ramp?

25 m

60 m

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$2^3 + 4(2 - 2) - 1$

_____

15 Simplify the expression.

$4[1^4 - (5 - 5)3]$

_____

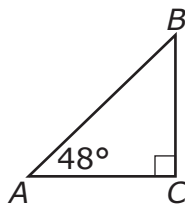**16** Solve for the value of *x*.

$$\frac{x+1}{1} = 24$$

_____

17 A swimming pool contains 10,300 gallons of water. The pool is drained at a rate of 10 gallons per minute. Which expression represents the amount of water in the pool after *x* minutes?

A $10{,}300x - 10$

B $10{,}300 - 10x$

C $10{,}300 + 10x$

_____

18 Simplify and write the answer as an integer in the blank.

$(1^{51})1^{11}$

_____

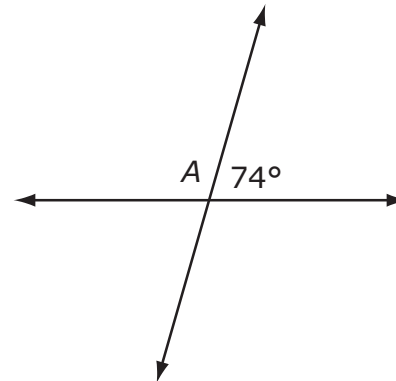**19** What is the measure of $\angle B$?

_____°

20 The diameter of an asteroid is 194,300 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

A / 74°

_____°

22 Write this number in scientific notation.

$11{,}448 = $ _____

23 An online store sells bags for $91.00 each. For each order, there is a one-time shipping and handling fee of $11.50. Which expression represents the cost of ordering *x* bags?

A $91.00x + 11.50$

B $x + 91.00 + 11.50$

C $(91.00 + 11.50)x$

_____

24 One leg of a right triangle is 35 units long and the other leg is 12 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$5.1 \times 10^{-3} =$ _____

26 A bag contains 50 balls, 26 of which are blue. Clayton takes a ball from the bag at random. What is the probability that he will take out a blue ball? Express the answer as a percent.

_____ %

27 Cady goes to the library every 7 days and Christina goes to the same library every 2 days. If they are together at the library on Monday, what is the next day they will be together at the library?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	220
5	180
10	140
15	100
20	60

Based on the above data, which of these is the most likely to be correct?

A The temperature after 30 minutes will be 50 °C.

B The temperature after 25 minutes will be 20 °C.

C The temperature after 30 minutes will be higher than the temperature after 25 minutes.

_____

Student: _____ Teacher: _____ Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 7 Answer Key

Item No.	Answer	Correct	Incorrect
1.	327.009, 327.09, 327.90	1	0
2.	C	1	0
3.	40	1	0
4.	511	1	0
5.	4740	1	0
6.	160	1	0
7.	6	1	0
8.	733	1	0
9.	$\frac{-7}{2}$, -1.4, 0.4, $\frac{3}{5}$, 2.5	2	0
10.	175, 70	1	0
11.	129	1	0
12.	C	1	0
13.	65	2	0
14.	7	2	0
15.	4	2	0
16.	23	1	0
17.	B	1	0
18.	1	1	0
19.	42	2	0
20.	1.943×10^5	2	0
21.	106	2	0
22.	1.1448×10^4	2	0
23.	A	2	0
24.	37	2	0
25.	0.0051	3	0
26.	52	2	0
27.	Monday	2	0
28.	B	1	0

Total ☐

1 Order from least to greatest.

241.05, 241.50, 242.005

_____ < _____ < _____

---

2 The distance between two hotels on a map is 3.4 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the hotels?

A 34 km

B 3400 km

C 340 km

_____

---

3 Solve for the value of *k*.

5*k* + 10 = 70

_____

---

4 Fill in the missing number in this sequence.

2, 6, 10, _____, 18, 22

5

Computer Sales	
Year	Computers
2005	19,330
2006	21,499
2007	24,845
2008	32,854

How many more computers were sold in 2007 than in 2005? _____

---

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many cartons of strawberry milk will be sold in 5 days? _____

---
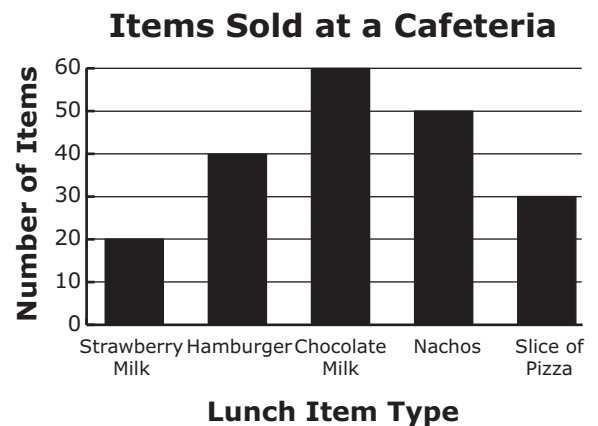
7 Solve for the value of *x*.

$$\frac{9 + 1}{x} = 5$$

_____

8 Write the correct answer as an integer in the blank.

$5^3 + 9^2 =$ _____

9 Write these numbers in increasing order.

$0.8, \dfrac{-7}{5}, 3.2, \dfrac{2}{7}, -2.1$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a ballroom are 37 centimeters (cm) by 32 cm. The blueprint uses a scale of 1 cm = 2 meters (m). What are the actual dimensions of the ballroom?
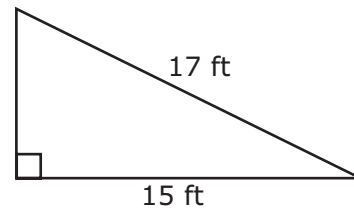
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$1^3 + 5^2 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 9.2523×10^7

B 925.23×10^5

C 92.523×10^6

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$3^2 + 3(9 - 7) - 2$

_____

15 Simplify the expression.

$9[35 - (2 - 1)3]$

_____

16 Solve for the value of *x*.

$$\frac{2x + 12}{2} = 9$$

_____

17 A water tank contains 60,000 gallons of water. The tank is drained at a rate of 120 gallons per minute. Which expression represents the amount of water in the tank after *x* minutes?

A $60,000 + 120x$

B $60,000 - 120x$

C $60,000x - 120$

_____

18 Simplify and write the answer as an integer in the blank.

$(9^1)3^2$

_____

19 What is the measure of $\angle A$?

_____°

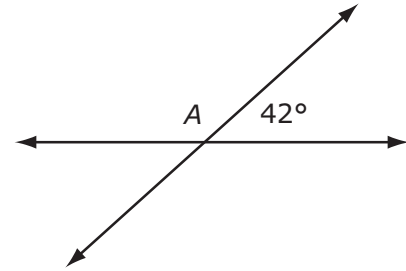**20** The diameter of Neptune is 49,528 kilometers (km). What is the diameter of Neptune in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____°

22 Write this number in scientific notation.

$91,123 =$ _____
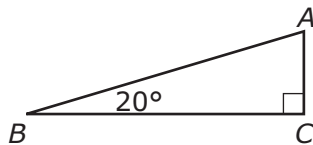
23 An online store sells aquariums for $66.50 each. For each order, there is a one-time shipping and handling fee of $20.50. Which expression represents the cost of ordering *x* aquariums?

A $x + 66.50 + 20.50$

B $66.50x + 20.50$

C $(66.50 + 20.50)x$

_____

24 One leg of a right triangle is 9 units long. The other leg of this triangle is 40 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$9.3 \times 10^{-2} =$ _____

26 A basket contains 30 candies, 10 of which are mints. Robin takes a candy from the basket at random. What is the probability that she will take out a mint? Express the answer as a percent.

_____%

27 Deborah goes to dance class every 2 days and Drew goes to the same dance class every 3 days. If they are together at the dance class on Monday, what is the next day they will be together at the dance class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	250
10	500
20	750
30	1000
40	1250

Based on the above data, which of these is the most likely to be correct?

A The temperature after 80 minutes will be 2500 °C.

B The temperature after 50 minutes will be 1200 °C.

C The temperature after 70 minutes will be higher than the temperature after 160 minutes.

_____

Student: _____ Teacher: _____ Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 8 Answer Key

Item No.	Answer	Correct	Incorrect
1.	241.05, 241.50, 242.005	1	0
2.	C	1	0
3.	12	1	0
4.	14	1	0
5.	5515	1	0
6.	100	1	0
7.	2	1	0
8.	206	1	0
9.	$-2.1, \dfrac{-7}{5}, \dfrac{2}{7}, 0.8, 3.2$	2	0
10.	74, 64	1	0
11.	26	1	0
12.	A	1	0
13.	8	2	0
14.	13	2	0
15.	288	2	0
16.	3	1	0
17.	B	1	0
18.	81	1	0
19.	70	2	0
20.	4.9528×10^4	2	0
21.	138	2	0
22.	9.1123×10^4	2	0
23.	B	2	0
24.	41	2	0
25.	0.093	3	0
26.	33.33	2	0
27.	Sunday	2	0
28.	A	1	0

Total [ ]

1   Order from least to greatest.

920.95, 920.59, 920.195

_____ < _____ < _____

2   The distance between two cities on a map is 6.3 centimeters (cm). The map uses a scale of 1 cm = 10 kilometers (km). How far apart are the cities?

A   63 km

B   630 km

C   6300 km

_____

3   Solve for the value of *n*.

$9n + 10 = 100$

_____

4   Fill in the missing number in this sequence.

7, 9, 13, _____, 27, 37

5

Computer Sales	
Year	Computers
2000	25,891
2001	33,539
2002	28,102
2003	37,500

How many more computers were sold in 2003 than in 2000?

_____

6   The graph shows the number of lunch items sold at a school cafeteria in one day.
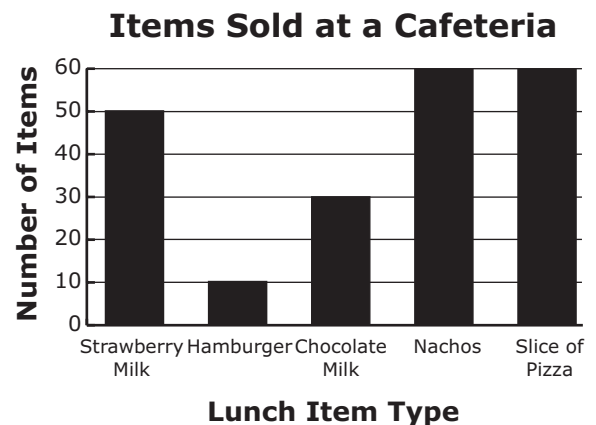
Items Sold at a Cafeteria

At this rate, how many cartons of chocolate milk will be sold in 4 days? _____

Student: _____ Teacher: _____ Date: _____

7 Solve for the value of x.

$$\frac{19 + 5}{x} = 6$$

_____

8 Write the correct answer as an integer in the blank.

$3^1 + 5^3 = $ _____

9 Write these numbers in increasing order.

$2.3, \dfrac{-9}{8}, 4.1, \dfrac{6}{7}, -3.2$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a garden are 14 centimeters (cm) by 21 cm. The blueprint uses a scale of 1 cm = 2 meters (m). What are the actual dimensions of the garden?
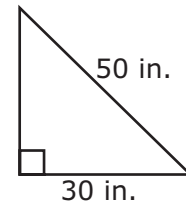
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$2^5 + 3^2 = $ _____

12 Which of these numbers is expressed properly in scientific notation?

A 217.14×10^4

B 2.1714×10^6

C 21.714×10^5

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

50 in.

30 in.

Note: $c^2 = a^2 + b^2$

_____ in.

14 Simplify the expression.

$4^2 + 7(4 - 3) - 4$

_____

15 Simplify the expression.

$2[1^9 - (3 - 2)5]$

_____

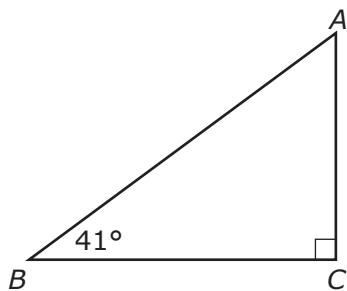**16** Solve for the value of x.

$$\frac{x + 4}{9} = 10$$

_____

17 A tank contains 55,000 gallons of water. The tank is drained at a rate of 105 gallons per minute. Which expression represents the amount of water in the tank after x minutes?

A $55,000x - 105$

B $55,000 + 105x$

C $55,000 - 105x$

_____

18 Simplify and write the answer as an integer in the blank.

$(5^3)8^1$

_____
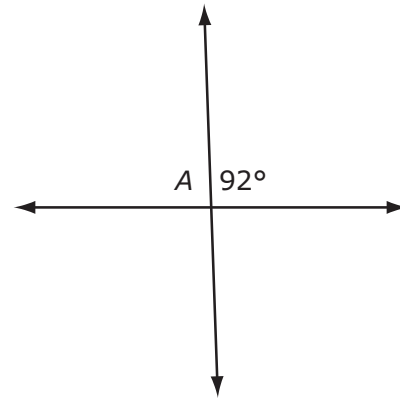
19 What is the measure of $\angle A$?

_____ °

20 The diameter of a planet's moon is 126,700 kilometers (km). What is the diameter of the planet's moon in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °

22 Write this number in scientific notation.

$15,781 =$ _____

23 An online store sells aquariums for $48.95 each. For each order, there is a one-time shipping and handling fee of $10.50. Which expression represents the cost of ordering x aquariums?

A $48.95x + 10.50$

B $(48.95 + 10.50)x$

C $x + 48.95 + 10.50$

_____

24 One leg of a right triangle is 28 units long. The hypotenuse of this triangle is 100 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$9.1 \times 10^{-2} =$ _____

26 A bag contains 40 balls, 10 of which are red. Evan takes out a ball from the bag at random. What is the probability that he will take out a red ball from the bag? Express the answer as a percent.

_____ %

27 Frieda goes to her music class every 8 days and Penelope goes to the same music class every 4 days. If they are together at the class on Thursday, what is the next day they will be together at the music class?

_____

28

Temperatures of a Liquid

Time (minutes)	Temperature (°C)
0	2200
10	2000
20	1800
30	1600
40	1400

Based on the above data, which of these is the most likely to be correct?

A The temperature after 60 minutes will be 1700 °C.

B The temperature after 70 minutes will be higher than the temperature after 40 minutes.

C The temperature after 50 minutes will be 1200 °C.

_____

Student: _____ Teacher: _____ Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 9 Answer Key

Item No.	Answer	Correct	Incorrect
1.	920.195, 920.59, 920.95	1	0
2.	A	1	0
3.	10	1	0
4.	19	1	0
5.	11,609	1	0
6.	120	1	0
7.	4	1	0
8.	128	1	0
9.	$-3.2, \dfrac{^-9}{8}, \dfrac{6}{7}, 2.3, 4.1$	2	0
10.	28, 42	1	0
11.	41	1	0
12.	B	1	0
13.	40	2	0
14.	19	2	0
15.	$^-8$	2	0
16.	86	1	0
17.	C	1	0
18.	1000	1	0
19.	49	2	0
20.	1.267×10^5	2	0
21.	88	2	0
22.	1.5781×10^4	2	0
23.	A	2	0
24.	96	2	0
25.	0.091	3	0
26.	25	2	0
27.	Friday	2	0
28.	C	1	0

Total [ ]

1 Order from least to greatest.

101.01, 101.10, 101.001

_____ < _____ < _____

2 The distance between two hotels on a map is 1.9 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the hotels?

A 19 km

B 190 km

C 1900 km

_____

3 Solve for the value of p.

$2p + 10 = 20$

_____

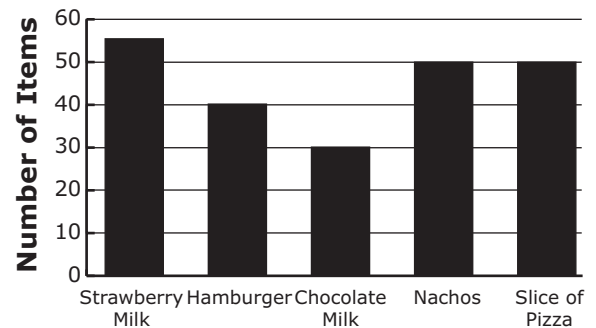**4** Fill in the missing number in this sequence.

10, 16, 22, _____, 34, 40

5

Computer Sales	
Year	Computers
2003	59,321
2004	62,989
2005	64,872
2006	67,874

How many more computers were sold in 2004 than in 2003? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many cartons of chocolate milk will be sold in 5 days? _____

7 Solve for the value of *x*.

$$\frac{9 + 7}{x} = 8$$

_____

8 Write the correct answer as an integer in the blank.

$3^3 + 3^2 =$ _____

9 Write these numbers in increasing order.

$1.8, \frac{-5}{9}, 4.2, \frac{1}{9}, -2.1$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of an arena are 70 centimeters (cm) by 60 cm. The blueprint uses a scale of 1 cm = 1.5 meters (m). What are the actual dimensions of the arena?
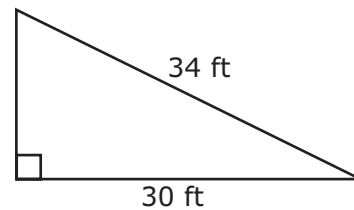
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$5^3 + 5^2 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 12.567×10^5

B 125.67×10^4

C 1.2567×10^6

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$1^2 + 9(6 + 2) - 1$

_____

15 Simplify the expression.

$2[15 - (2 + 2)3]$

_____

16 Solve for the value of *x*.

$$\frac{3x + 33}{3} = 1$$

_____

17 A water tank contains 45,000 gallons of water. The tank is drained at a rate of 50 gallons per minute. Which expression represents the amount of water in the tank after *x* minutes?

A $45,000 - 50x$

B $45,000 + 50x$

C $45,000x - 50$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^4)9^1$

_____

19 What is the measure of ∠A?

_____ °

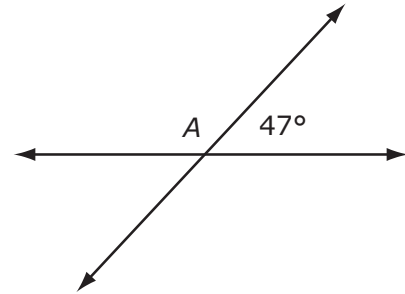**20** The radius of a moon is 3,397,000 meters (m). What is the radius of the moon in scientific notation?

_____ m

21 What is the measure of ∠A?

_____ °

22 Write this number in scientific notation.

$34{,}234 = $ _____
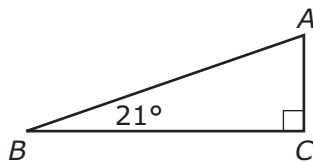
23 An online store sells aquariums for $70.00 each. For each order, there is a one-time shipping and handling fee of $10.00. Which expression represents the cost of ordering *x* aquariums?

A $x + 70.00 + 10.00$

B $(70.00 + 10.00)x$

C $70.00x + 10.00$

_____

24 One leg of a right triangle is 12 units long. The other leg of this triangle is 5 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$1.222 \times 10^{-4} =$ _____

26 A basket contains 50 pieces of fruit, 15 of which are oranges. Kyle takes a piece of fruit from the basket at random. What is the probability that he will take out an orange? Express the answer as a percent.

_____%

27 Alexandra goes to a painting class every 3 days and Helen goes to the same painting class every 5 days. If they are together at the painting class on Tuesday, what is the next day they will be together at the painting class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	20
10	600
20	1000
30	1250
40	1400

Based on the above data, which of these is the most likely to be correct?

A The temperature after 70 minutes will be 1300 °C.

B The temperature after 60 minutes will be 1600 °C.

C The temperature after 70 minutes will be higher than the temperature after 100 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 10 Answer Key

Item No.	Answer	Correct	Incorrect
1.	101.001, 101.01, 101.10	1	0
2.	B	1	0
3.	5	1	0
4.	28	1	0
5.	3668	1	0
6.	150	1	0
7.	2	1	0
8.	36	1	0
9.	$-2.1, \dfrac{-5}{9}, \dfrac{1}{9}, 1.8, 4.2$	2	0
10.	105, 90	1	0
11.	150	1	0
12.	C	1	0
13.	16	2	0
14.	72	2	0
15.	6	2	0
16.	$^-10$	1	0
17.	A	1	0
18.	144	1	0
19.	69	2	0
20.	3.397×10^6	2	0
21.	133	2	0
22.	3.4234×10^4	2	0
23.	C	2	0
24.	13	2	0
25.	0.0001222	3	0
26.	30	2	0
27.	Wednesday	2	0
28.	B	1	0

Total [   ]

1 Order from least to greatest.

125.09, 125.90, 125.009

_____ < _____ < _____

2 The distance between two cities on a map is 49 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 49 km

B 490 km

C 4900 km

_____

3 Solve for the value of n.

$3n + 9 = 21$

_____

4 Fill in the missing number in this sequence.

4, 12, 20, _____, 36, 44

5

Car Sales	
Year	Cars
2004	68,100
2005	72,887
2006	78,962
2007	88,111

How many more cars were sold in 2006 than in 2004? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.
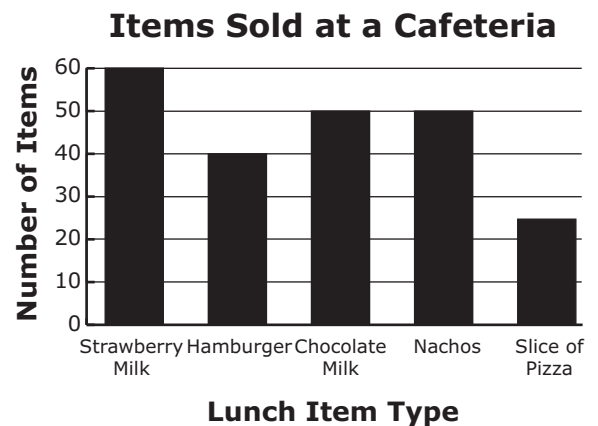
Items Sold at a Cafeteria

At this rate, how many cartons of strawberry milk will be sold in 5 days? _____

7 Solve for the value of *x*.

$$\frac{20 - 2}{x} = 2$$

_____

8 Write the correct answer as an integer in the blank.

$1^3 + 9^2 =$ _____

9 Write these numbers in increasing order.

$8.7, \frac{-9}{2}, 8.9, \frac{9}{5}, -3.7$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of an arena are 150 centimeters (cm) by 130 cm. The blueprint uses a scale of 1 cm = 10 meters (m). What are the actual dimensions of the arena?
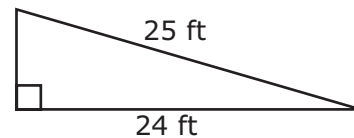
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$5^3 + 4^2 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 29.520×10^5

B 295.20×10^4

C 2.9520×10^6

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

25 ft

24 ft

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$2^3 + 2(2 - 2) - 2$

_____

15 Simplify the expression.

$9[5 + (5 - 1)1]$

_____

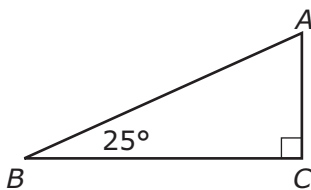**16** Solve for the value of *x*.

$$\frac{x + 12}{1} = 1$$

_____

17 A pond contains 90,000 gallons of water. The pond is drained at a rate of 9 gallons per minute. Which expression represents the amount of water in the pond after *x* minutes?

A $90,000 - 9x$

B $90,000 + 9x$

C $90,000x - 9$

_____

18 Simplify and write the answer as an integer in the blank.

$(1^3)2^2$

_____

19 What is the measure of ∠*A*?

_____ °

20 The radius of Saturn is 60,268 kilometers (km). What is the radius of Saturn in scientific notation?

_____ km

21 What is the measure of ∠*A*?

_____ °
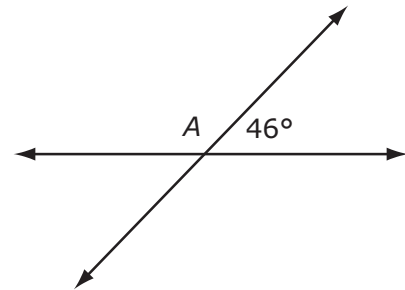
22 Write this number in scientific notation.

$24,361 = $ _____

23 An online store sells laptops for $500.00 each. For each order, there is a one-time shipping and handling fee of $50.00. Which expression represents the cost of ordering *x* laptops?

A $x + 500.00 + 50.00$

B $(500.00 + 50.00)x$

C $500.00x + 50.00$

_____

24 One leg of a right triangle is 20 units long. The hypotenuse of this triangle is 25 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$9.1 \times 10^{-2} =$ _____

26 A box contains 50 balls, 20 of which are golf balls. Chris takes a ball out from the box at random. What is the probability that he will take out a golf ball? Express the answer as a percent.

_____%

27 Alexis goes to her sports club every 2 days and Joan goes to the same sports club every 10 days. If they are together at the sports club on Sunday, what is the next day they will be together at the sports club?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	1800
10	1400
20	1000
30	600
40	200

Based on the above data, which of these is the most likely to be correct?

A The temperature after 50 minutes will be 500 °C.

B The temperature after 60 minutes will be $^-600$ °C.

C The temperature after 60 minutes will be higher than the temperature after 50 minutes.

_____

Student: _____ Teacher: _____ Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 11 Answer Key

Item No.	Answer	Correct	Incorrect
1.	125.009, 125.09, 125.90	1	0
2.	C	1	0
3.	4	1	0
4.	28	1	0
5.	10,862	1	0
6.	300	1	0
7.	9	1	0
8.	82	1	0
9.	$\dfrac{-9}{2}$, -3.7, $\dfrac{9}{5}$, 8.7, 8.9	2	0
10.	1500, 1300	1	0
11.	141	1	0
12.	C	1	0
13.	7	2	0
14.	6	2	0
15.	81	2	0
16.	$^-11$	1	0
17.	A	1	0
18.	4	1	0
19.	65	2	0
20.	6.0268×10^4	2	0
21.	134	2	0
22.	2.4361×10^4	2	0
23.	C	2	0
24.	15	2	0
25.	0.091	3	0
26.	40	2	0
27.	Wednesday	2	0
28.	B	1	0

Total [ ]

1 Order from least to greatest.

181.01, 181.10, 181.001

_____ < _____ < _____

2 The distance between two cities on a map is 18.8 centimeters (cm). The map uses a scale of 1 cm = 10 kilometers (km). How far apart are the cities?

A 18.8 km

B 1880 km

C 188 km

_____

3 Solve for the value of *n*.

$5n + 60 = 90$

_____

4 Fill in the missing number in this sequence.

6, 10, 14, _____, 22, 26

5

Television Sales	
Year	Televisions
1998	17,485
1999	19,625
2000	23,831
2001	27,771

How many more televisions were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
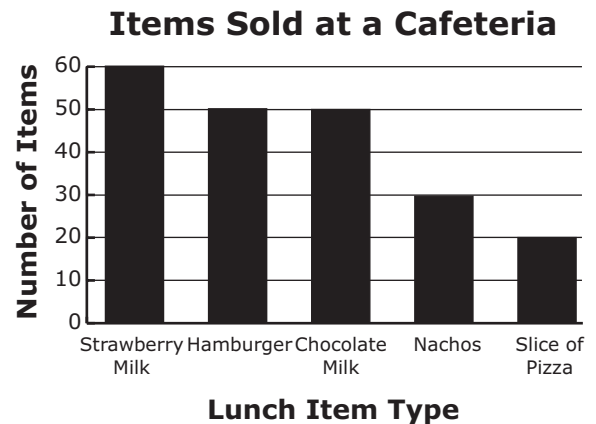
At this rate, how many cartons of strawberry milk will be sold in 2 days? _____

7 Solve for the value of *x*.

$$\frac{10 + 2}{x} = 3$$

_____

8 Write the correct answer as an integer in the blank.

$8^2 + 2^2 = $ _____

9 Write these numbers in increasing order.

$2.1, \ \frac{-7}{5}, \ 3.5, \ \frac{5}{9}, \ -3.9$

____ ____ ____ ____ ____

10 On a blueprint, the dimensions of a garden are 5 centimeters (cm) by 3 cm. The blueprint uses a scale of 1 cm = 5 meters (m). What are the actual dimensions of the garden?
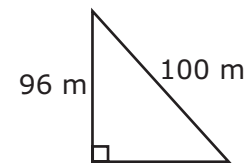
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$3^2 + 9^1 = $ _____

12 Which of these numbers is expressed properly in scientific notation?

A 2.2221×10^6

B 22.221×10^5

C 222.21×10^4

_____

13 A ramp is constructed with the given dimensions. What is the width of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$2^3 + 2(2 - 5) - 1$

_____

15 Simplify the expression.

$5[2^2 - (5 - 2)1]$

_____

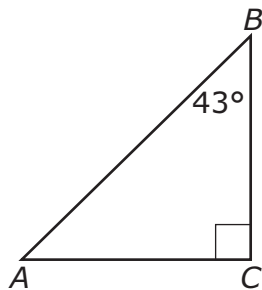**16**   Solve for the value of x.

$$\frac{x + 3}{10} = 2$$

_____

17   A swimming pool contains 12,200 gallons of water. The pool is drained at a rate of 21 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $12{,}200 + 21x$

B $12{,}200x - 21$

C $12{,}200 - 21x$

_____

18   Simplify and write the answer as an integer in the blank.

$(1^5)7^2$

_____

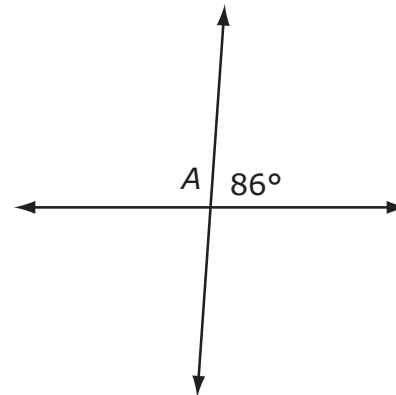**19**   What is the measure of $\angle A$?

_____ °

20   The diameter of an asteroid is 215,800 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21   What is the measure of $\angle A$?

_____ °

22   Write this number in scientific notation.

$25{,}012 =$ _____

23   An online store sells bags for $19.45 each. For each order, there is a one-time shipping and handling fee of $3.55. Which expression represents the cost of ordering x bags?

A $19.45x + 3.55$

B $(19.45 + 3.55)x$

C $x + 19.45 + 3.55$

_____

24 One leg of a right triangle is 12 inches (in.) long. The hypotenuse of this triangle is 20 in. long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ in.

25 Write the number as a decimal in standard form.

$1.7 \times 10^{-2} =$ _____

26 A bag contains 28 balls, 7 of which are red. Gary takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

27 Elisa goes to a music class every 4 days and Ashlee goes to the same music class every 6 days. If they are together at the class on Tuesday, what is the next day they will be together at the music class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	190
5	180
10	170
15	160
20	150

Based on the above data, which of these is the most likely to be correct?

A The temperature after 30 minutes will be 200 °C.

B The temperature after 25 minutes will be 140 °C.

C The temperature after 30 minutes will be higher than the temperature after 25 minutes.

_____

Student: Teacher: Date:

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 12 Answer Key

Item No.	Answer	Correct	Incorrect
1.	181.001, 181.01, 181.10	1	0
2.	C	1	0
3.	6	1	0
4.	18	1	0
5.	3940	1	0
6.	120	1	0
7.	4	1	0
8.	68	1	0
9.	$-3.9, \dfrac{-7}{5}, \dfrac{5}{9}, 2.1, 3.5$	2	0
10.	25, 15	1	0
11.	18	1	0
12.	A	1	0
13.	28	2	0
14.	1	2	0
15.	5	2	0
16.	17	1	0
17.	C	1	0
18.	49	1	0
19.	47	2	0
20.	2.158×10^5	2	0
21.	94	2	0
22.	2.5012×10^4	2	0
23.	A	2	0
24.	16	2	0
25.	0.017	3	0
26.	25	2	0
27.	Sunday	2	0
28.	B	1	0

Total [ ]

1 Order from least to greatest.

117.09, 117.90, 117.009

_____ < _____ < _____

2 The distance between two cities on a map is 4.7 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 4700 km

B 47 km

C 470 km

_____

3 Solve for the value of n.

$2n + 25 = 37$

_____

4 Fill in the missing number in this sequence.

8, 15, 22, _____, 36, 43

5

Laptop Sales	
Year	Laptops
1998	18,185
1999	20,225
2000	24,531
2001	28,471

How many more laptops were sold in 1999 than in 1998? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
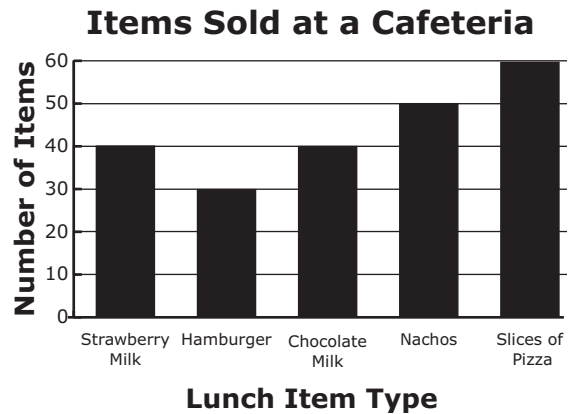
At this rate, how many cartons of strawberry milk will be sold in 6 days? _____

7 Solve for the value of *x*.

$$\frac{17 + 1}{x} = 18$$

_____

8 Write the correct answer as an integer in the blank.

$9^2 + 7^2 =$ _____

9 Write these numbers in increasing order.

$2.7, \dfrac{-7}{6}, 3.8, \dfrac{2}{3}, -3.6$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a small park are 25 centimeters (cm) by 30 cm. The blueprint uses a scale of 1 cm = 3 meters (m). What are the actual dimensions of the small park?
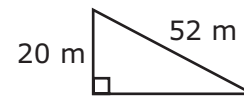
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$3^3 + 2^4 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 17.421×10^5

B 1.7421×10^6

C 174.21×10^4

_____

13 A ramp is constructed with the given dimensions. What is the width of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$4^3 + 3(2 - 1) - 6$

_____

15 Simplify the expression.

$2[1^1 - (1 - 1)2]$

_____

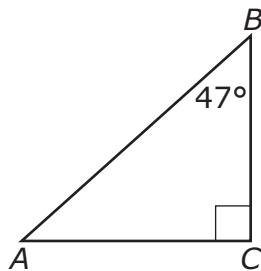**16** Solve for the value of *x*.

$$\frac{x - 1}{4} = 3$$

_____

17 A swimming pool contains 51,000 gallons of water. The pool is drained at a rate of 11 gallons per minute. Which expression represents the amount of water in the pool after *x* minutes?

A $51{,}000 - 11x$

B $51{,}000 + 11x$

C $51{,}000x - 11$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^5)4^3$

_____

19 What is the measure of ∠*A*?

_____ °

20 The diameter of an asteroid is 914,200 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of ∠*A*?

_____ °
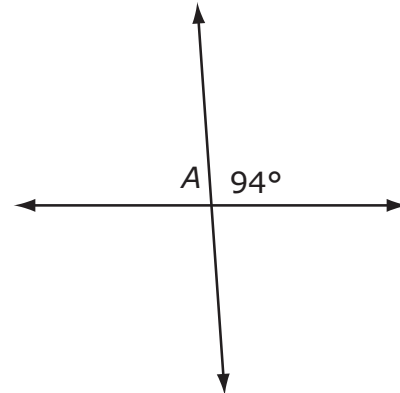
22 Write this number in scientific notation.

$32{,}138 =$ _____

23 An online store sells bags for $13.75 each. For each order, there is a one-time shipping and handling fee of $1.50. Which expression represents the cost of ordering *x* bags?

A $13.75x + 1.50$

B $x + 13.75 + 1.50$

C $(13.75 + 1.50)x$

_____

24 One leg of a right triangle is 6 inches (in.) long. The hypotenuse of this triangle is 10 in. long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ in.

25 Write the number as a decimal in standard form.

$1.3 \times 10^{-3} =$ _____

26 A bag contains 20 balls, 2 of which are red. Dylan takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

27 Lauren goes to her dance class every 7 days and Grace goes to the same dance class every 5 days. If they are together at the class on Thursday, what is the next day they will be together at the dance class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	20
5	30
10	40
15	50
20	60

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 50 °C.

B The temperature after 30 minutes will be 30 °C.

C The temperature after 30 minutes will be higher than the temperature after 20 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 13 Answer Key

Item No.	Answer	Correct	Incorrect
1.	117.009, 117.09, 117.90	1	0
2.	C	1	0
3.	6	1	0
4.	29	1	0
5.	2040	1	0
6.	240	1	0
7.	1	1	0
8.	130	1	0
9.	$-3.6, \dfrac{-7}{6}, \dfrac{2}{3}, 2.7, 3.8$	2	0
10.	75, 90	1	0
11.	43	1	0
12.	B	1	0
13.	48	2	0
14.	61	2	0
15.	2	2	0
16.	13	1	0
17.	A	1	0
18.	2048	1	0
19.	43	2	0
20.	9.142×10^5	2	0
21.	86	2	0
22.	3.2138×10^4	2	0
23.	A	2	0
24.	8	2	0
25.	0.0013	3	0
26.	10	2	0
27.	Thursday	2	0
28.	C	1	0

Total ☐

1 2 3 4 5 6 7 8 9 10 11 12 A B C D E

1   Order from least to greatest.

100.05, 100.50, 100.005

_____ < _____ < _____

2   The distance between two cities on a map is 7.5 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A   75 km

B   750 km

C   7500 km

_____

3   Solve for the value of n.

$2n + 5 = 15$

_____

4   Fill in the missing number in this sequence.

1, 2, 4, _____, 16, 32

5

House Sales	
Year	Houses
1998	10,005
1999	13,585
2000	16,998
2001	20,112

How many more houses were sold in 2000 than in 1998? _____

6   The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
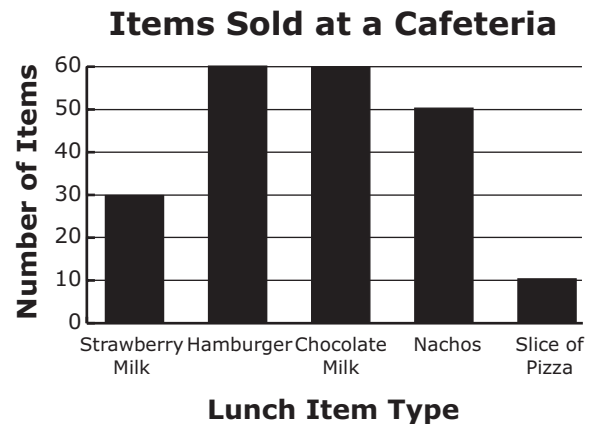
At this rate, how many cartons of chocolate milk will be sold in 4 days? _____

7 Solve for the value of *x*.

$$\frac{1 - 14}{x} = 3$$

_____

8 Write the correct answer as an integer in the blank.

$1^3 + 7^2 =$ _____

9 Write these numbers in increasing order.

$1.7, \frac{-1}{5}, 5.4, \frac{9}{4}, {-6.4}$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a swimming pool are 30 centimeters (cm) by 25 cm. The blueprint uses a scale of 1 cm = 2 meters (m). What are the actual dimensions of the pool?
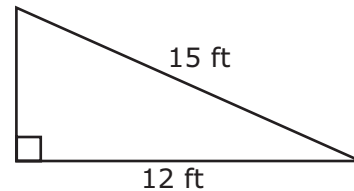
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$2^3 + 6^2 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 53.543×10^5

B 535.43×10^4

C 5.3543×10^6

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$1^2 + 2(3 - 2) - 1$

_____

15 Simplify the expression.

$9[20 - (2 - 1)6]$

_____

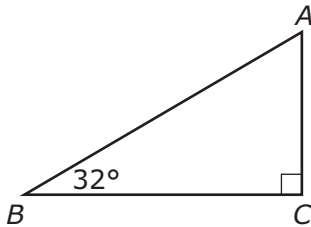**16** Solve for the value of x.

$$\frac{x-1}{9} = 1$$

_____

17 A swimming pool contains 60,000 gallons of water. The pool is drained at a rate of 120 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $60,000 - 120x$

B $60,000 + 120x$

C $60,000x - 120$

_____

18 Simplify and write the answer as an integer in the blank.

$(4^3)5^2$
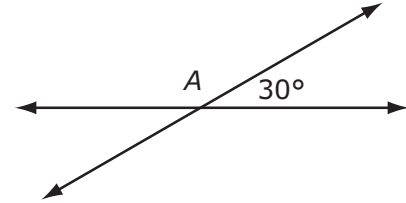
_____

19 What is the measure of $\angle A$?

_____ °

20 The radius of a planet is 113,500 kilometers (km). What is the radius of the planet in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °

22 Write this number in scientific notation.

$98,745 = $ _____

23 An online store sells birdhouses for $36.00 each. For each order, there is a one-time shipping and handling fee of $12.00. Which expression represents the cost of ordering x birdhouses?

A $36.00x + 12.00$

B $(36.00 + 12.00)x$

C $x + 36.00 + 12.00$

_____

24 One leg of a right triangle is 12 units long. The hypotenuse of this triangle is 20 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$8.9 \times 10^{-5} = $ _____

26 A basket contains 20 apples, 7 of which have worms. Walt takes an apple from the basket at random. What is the probability that he will take out an apple <u>without</u> worms? Express the answer as a percent.

_____ %

27 Nancy goes to her health club every 6 days and Ken goes to the same health club every 4 days. If they are together at the health club on Monday, what is the next day they will be together at the health club?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	170
25	340
50	510
75	680
100	850

Based on the above data, which of these is the most likely to be correct?

A The temperature after 150 minutes will be 300 °C.

B The temperature after 150 minutes will be higher than the temperature after 175 minutes.

C The temperature after 175 minutes will be 1360 °C.

_____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 14 Answer Key

Item No.	Answer	Correct	Incorrect
1.	100.005, 100.05, 100.50	1	0
2.	B	1	0
3.	5	1	0
4.	8	1	0
5.	6993	1	0
6.	240	1	0
7.	5	1	0
8.	50	1	0
9.	$-6.4, \dfrac{-1}{5}, 1.7, \dfrac{9}{4}, 5.4$	2	0
10.	60, 50	1	0
11.	44	1	0
12.	C	1	0
13.	9	2	0
14.	2	2	0
15.	126	2	0
16.	8	1	0
17.	A	1	0
18.	1600	1	0
19.	58	2	0
20.	1.135×10^5	2	0
21.	150	2	0
22.	9.8745×10^4	2	0
23.	A	2	0
24.	16	2	0
25.	0.000089	3	0
26.	65	2	0
27.	Saturday	2	0
28.	C	1	0

Total ☐

1 Order from least to greatest.

584.09, 584.90, 584.009

_____ < _____ < _____

2 The distance between two cities on a map is 1.6 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 1600 km

B 16 km

C 160 km

_____

3 Solve for the value of n.

$2n + 5 = 19$

_____

4 Fill in the missing number in this sequence.

9, 11, 13, _____, 17, 19

5

Laptop Sales	
Year	Laptops
1998	19,185
1999	21,225
2000	25,531
2001	29,471

How many more laptops were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
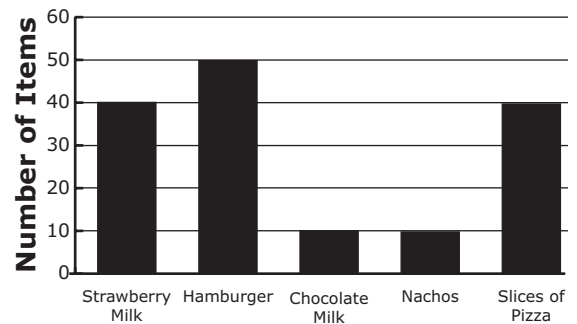
At this rate, how many cartons of strawberry milk will be sold in 4 days? _____

7 Solve for the value of *x*.

$$\frac{14 + 6}{x} = 5$$

_____

8 Write the correct answer as an integer in the blank.

$3^2 + 1^3 =$ _____

9 Write these numbers in increasing order.

$2.8, \dfrac{-8}{3}, 3.7, \dfrac{2}{5}, -3.7$

____ ____ ____ ____ ____

10 On a blueprint, the dimensions of a park are 30 centimeters (cm) by 26 cm. The blueprint uses a scale of 1 cm = 5 meters (m). What are the actual dimensions of the park?
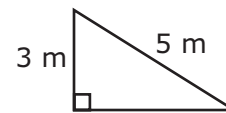
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$2^3 + 3^1 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 32.432×10^5

B 324.32×10^4

C 3.2432×10^6

_____

13 A ramp is constructed with the given dimensions. What is the width of the ramp?

3 m   5 m

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$10^2 + 2(2 - 3) - 38$

_____

15 Simplify the expression.

$3[2^3 - (4 - 3)2]$

_____

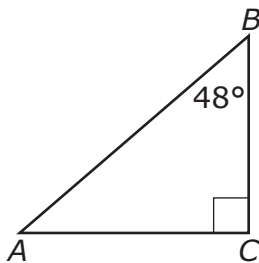**16**   Solve for the value of x.

$$\frac{x + 6}{4} = 5$$

_____

17   A swimming pool contains 11,220 gallons of water. The pool is drained at a rate of 33 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $11,220 + 33x$

B $11,220x - 33$

C $11,220 - 33x$

_____

18   Simplify and write the answer as an integer in the blank.

$(3^3)8^1$

_____

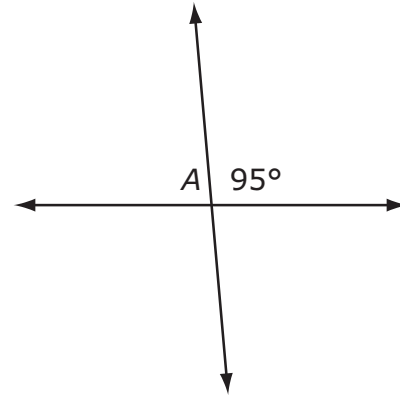**19**   What is the measure of $\angle A$?

_____ °

20   The diameter of an asteroid is 334,200 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21   What is the measure of $\angle A$?

_____ °

22   Write this number in scientific notation.

$58,265 = $ _____

23   An online store sells bags for $7.85 each. For each order, there is a one-time shipping and handling fee of $2.55. Which expression represents the cost of ordering x bags?

A $7.85x + 2.55$

B $(7.85 + 2.55)x$

C $x + 7.85 + 2.55$

_____

24 One leg of a right triangle is 24 meters (m) long. The hypotenuse of this triangle is 40 m long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ m

25 Write the number as a decimal in standard form.

$1.9 \times 10^{-3} =$ _____

26 A bag contains 32 balls, 8 of which are red. Marcos takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

27 Lindsay goes to her music class every 2 days and Vivian goes to the same music class every 5 days. If they are together at the class on Monday, what is the next day they will be together at the music class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	10
5	20
10	30
15	40
20	50

Based on the above data, which of these is the most likely to be correct?

A The temperature after 30 minutes will be 40 °C.

B The temperature after 25 minutes will be 60 °C.

C The temperature after 25 minutes will be higher than the temperature after 30 minutes.

_____

Student: _____ Teacher: _____ Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 15 Answer Key

Item No.	Answer	Correct	Incorrect
1.	584.009, 584.09, 584.90	1	0
2.	C	1	0
3.	7	1	0
4.	15	1	0
5.	3940	1	0
6.	160	1	0
7.	4	1	0
8.	10	1	0
9.	$-3.7, \dfrac{-8}{3}, \dfrac{2}{5}, 2.8, 3.7$	2	0
10.	150, 130	1	0
11.	11	1	0
12.	C	1	0
13.	4	2	0
14.	60	2	0
15.	18	2	0
16.	14	1	0
17.	C	1	0
18.	216	1	0
19.	42	2	0
20.	3.342×10^5	2	0
21.	85	2	0
22.	5.8265×10^4	2	0
23.	A	2	0
24.	32	2	0
25.	0.0019	3	0
26.	25	2	0
27.	Thursday	2	0
28.	B	1	0

Total [ ]

1 Order from least to greatest.

421.05, 421.50, 421.005

_____ < _____ < _____

2 The distance between two hotels on a map is 1.7 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the hotels?

A 170 km

B 17 km

C 1700 km

_____

3 Solve for the value of p.

$5p + 10 = 45$

_____

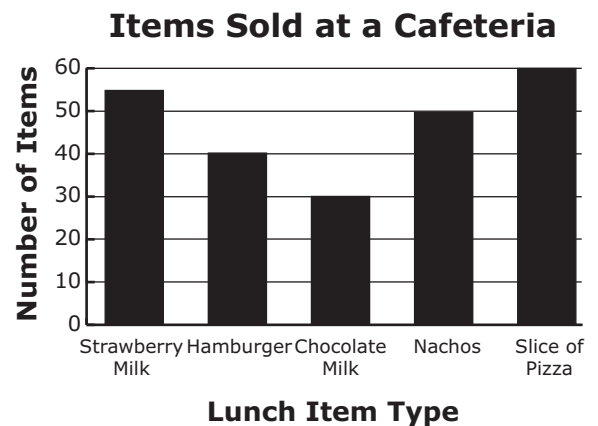**4** Fill in the missing number in this sequence.

0, 20, 40, _____, 80, 100

5

Car Sales	
Year	Cars
2001	18,470
2002	20,850
2003	24,931
2004	32,541

How many more cars were sold in 2002 than in 2001? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many hamburgers will be sold in 5 days? _____

7   Solve for the value of x.

$$\frac{8 + 1}{x} = 3$$

_____

8   Write the correct answer as an integer in the blank.

$4^3 + 4^2 = $ _____

9   Write these numbers in increasing order.

$7.8, \frac{-1}{9}, 4.6, \frac{7}{3}, -7.1$

_____ _____ _____ _____ _____

10   On a blueprint, the dimensions of a hotel are 60 centimeters (cm) by 20 cm. The blueprint uses a scale of 1 cm = 2.5 meters (m). What are the actual dimensions of the hotel?
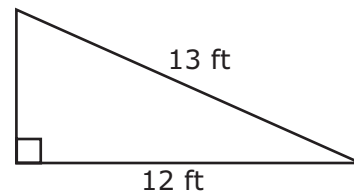
_____ m by _____ m

11   Write the correct answer as an integer in the blank.

$5^3 - 5^2 = $ _____

12   Which of these numbers is expressed properly in scientific notation?

A 13.519×10^5

B 1.3519×10^6

C 135.19×10^4

_____

13   A ramp is constructed with the given dimensions. What is the height of the ramp?

Note: $c^2 = a^2 + b^2$

_____ ft

14   Simplify the expression.

$7^2 + 3(4 - 3) - 1$

_____

15   Simplify the expression.

$2[5 - (4 + 1)2]$

_____

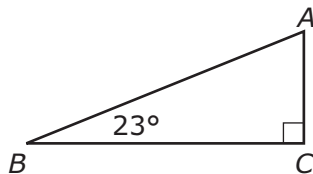**16** Solve for the value of x.

$$\frac{4x - 12}{4} = 1$$

_____

17 A water tank contains 65,000 gallons of water. The tank is drained at a rate of 190 gallons per minute. Which expression represents the amount of water in the tank after x minutes?

A $65,000x - 190$

B $65,000 + 190x$

C $65,000 - 190x$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^4)6^1$

_____
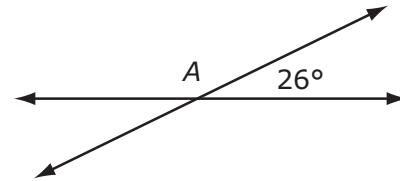
19 What is the measure of $\angle A$?

_____°

20 The radius of a planet is 71,492 kilometers (km). What is the radius of the planet in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____°

22 Write this number in scientific notation.

$98,765 = $ _____

23 An online store sells aquariums for $75.00 each. For each order, there is a one-time shipping and handling fee of $5.50. Which expression represents the cost of ordering x aquariums?

A $75.00x + 5.50$

B $(75.00 + 5.50)x$

C $x + 75.00 + 5.50$

_____

24 One leg of a right triangle is 3 units long. The other leg of this triangle is 4 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$1.456 \times 10^{-2} =$ _____

26 A basket contains 26 pieces of fruit, 13 of which are pears. Rusty takes a piece of fruit from the basket at random. What is the probability that he will take out a pear? Express the answer as a percent.

_____ %

27 Jessy goes to the health club every 2 days and Daisy goes to the same health club every 6 days. If they are together at the health club on Sunday, what is the next day they will be together at the health club?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	200
10	600
20	1000
30	1400
40	1800

Based on the above data, which of these is the most likely to be correct?

A The temperature after 50 minutes will be 1300 °C.

B The temperature after 50 minutes will be higher than the temperature after 70 minutes.

C The temperature after 60 minutes will be 2600 °C.

_____

Student: _____ Teacher: _____ Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 16 Answer Key

Item No.	Answer	Correct	Incorrect
1.	421.005, 421.05, 421.50	1	0
2.	A	1	0
3.	7	1	0
4.	60	1	0
5.	2380	1	0
6.	200	1	0
7.	3	1	0
8.	80	1	0
9.	$-7.1, \dfrac{-1}{9}, \dfrac{7}{3}, 4.6, 7.8$	2	0
10.	150, 50	1	0
11.	100	1	0
12.	B	1	0
13.	5	2	0
14.	51	2	0
15.	$^-10$	2	0
16.	$^-2$	1	0
17.	C	1	0
18.	96	1	0
19.	67	2	0
20.	7.1492×10^4	2	0
21.	154	2	0
22.	9.8765×10^4	2	0
23.	A	2	0
24.	5	2	0
25.	0.01456	3	0
26.	50	2	0
27.	Saturday	2	0
28.	C	1	0

Total [   ]

1 Order from least to greatest.

387.09, 387.90, 387.009

_____ < _____ < _____

2 The distance between two cities on a map is 1.1 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 110 km

B 1100 km

C 11 km

_____

3 Solve for the value of n.

$2n + 50 = 90$

_____

4 Fill in the missing number in this sequence.

2, 9, 16, _____, 30, 37

5

Television Sales	
Year	Televisions
1998	13,185
1999	15,525
2000	19,231
2001	23,971

How many more televisions were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
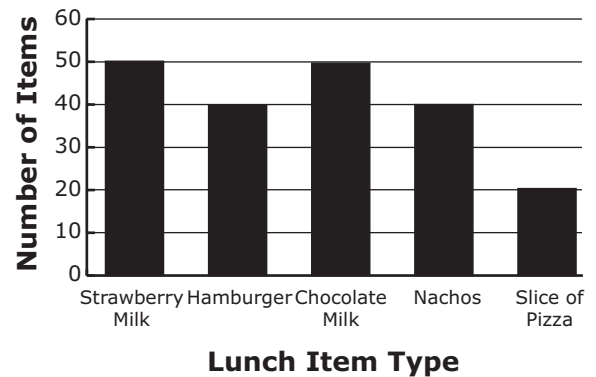
At this rate, how many slices of pizza will be sold in 5 days? _____

7 Solve for the value of *x*.

$$\frac{8 + 7}{x} = 5$$

_____

8 Write the correct answer as an integer in the blank.

$2^2 + 7^3 =$ _____

9 Write these numbers in increasing order.

0.2, $\frac{-3}{2}$, 2.3, $\frac{4}{9}$, -1.2

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a park are 20 centimeters (cm) by 15 cm. The blueprint uses a scale of 1 cm = 10 meters (m). What are the actual dimensions of the park?
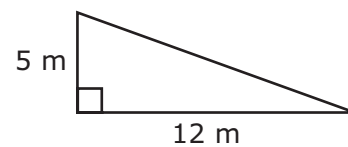
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$3^3 + 1^{100} =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 4.2422×10^6

B 42.422×10^5

C 424.22×10^4

_____

13 A ramp is constructed with the given dimensions. What is the length of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$1^3 + 4(1 - 1) - 6$

_____

15 Simplify the expression.

$2[1^4 - (4 - 4)2]$

_____

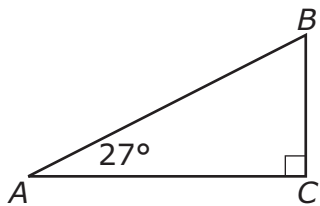**16** Solve for the value of x.

$$\frac{x+1}{1} = 10$$

_____

17 A swimming pool contains 10,200 gallons of water. The pool is drained at a rate of 11 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $10,200x - 11$

B $10,200 + 11x$

C $10,200 - 11x$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^5)1^{100}$

_____

19 What is the measure of $\angle B$?

_____ °

20 The diameter of an asteroid is 124,300 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °
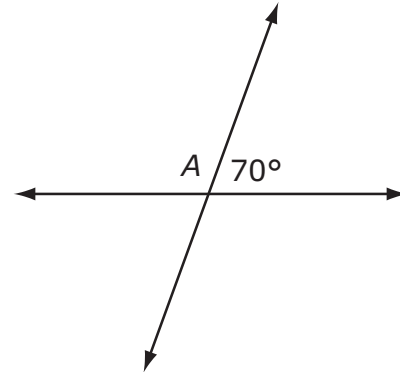
22 Write this number in scientific notation.

$11,338 = $ _____

23 An online store sells bags for $9.00 each. For each order, there is a one-time shipping and handling fee of $1.50. Which expression represents the cost of ordering x bags?

A $x + 9.00 + 1.50$

B $(9.00 + 1.50)x$

C $9.00x + 1.50$

_____

24 One leg of a right triangle is 35 units long. The hypotenuse of this triangle is 37 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

---

25 Write the number as a decimal in standard form.

$6.1 \times 10^{-3} =$ _____

---

26 A bag contains 20 balls, 6 of which are blue. Jim takes a ball from the bag at random. What is the probability that he will take out a blue ball? Express the answer as a percent.

_____ %

---

27 Bailey goes to the library every 3 days and Beatriz goes to the same library every day. If they are together at the library on Monday, what is the next day they will be together at the library?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	200
5	160
10	120
15	80
20	40

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 0 °C.

B The temperature after 30 minutes will be 20 °C.

C The temperature after 30 minutes will be higher than the temperature after 25 minutes.

_____

Student: Teacher: Date:

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 17 Answer Key

Item No.	Answer	Correct	Incorrect
1.	387.009, 387.09, 387.90	1	0
2.	A	1	0
3.	20	1	0
4.	23	1	0
5.	4740	1	0
6.	100	1	0
7.	3	1	0
8.	347	1	0
9.	$\frac{-3}{2}$, −1.2, 0.2, $\frac{4}{9}$, 2.3	2	0
10.	200, 150	1	0
11.	28	1	0
12.	A	1	0
13.	13	2	0
14.	−5	2	0
15.	2	2	0
16.	9	1	0
17.	C	1	0
18.	32	1	0
19.	63	2	0
20.	1.243×10^5	2	0
21.	110	2	0
22.	1.1338×10^4	2	0
23.	C	2	0
24.	12	2	0
25.	0.0061	3	0
26.	30	2	0
27.	Thursday	2	0
28.	A	1	0

Total [ ]

1 Order from least to greatest.

707.07, 707.70, 707.007

_____ < _____ < _____

---

2 The distance between two parks on a map is 1.4 centimeters (cm). The map uses a scale of 1 cm = 10 kilometers (km). How far apart are the parks?

A 1400 km

B 140 km

C 14 km

_____

---

3 Solve for the value of *n*.

$6n + 60 = 90$

_____

---

4 Fill in the missing number in this sequence.

7, 10, 13, _____, 19, 22

5

Laptop Sales	
Year	Laptops
1998	18,485
1999	20,625
2000	24,831
2001	28,771

How many more laptops were sold in 2001 than in 1998? _____

---

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
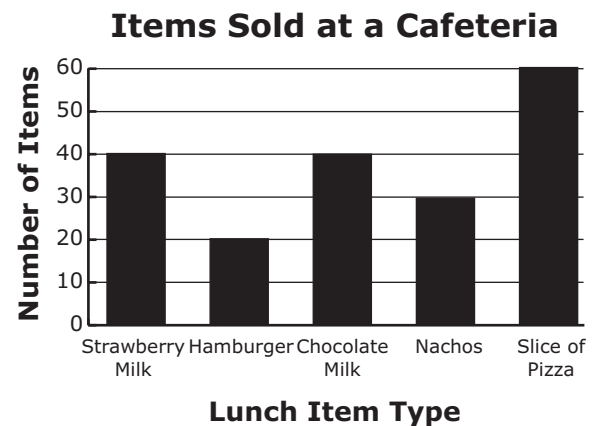
At this rate, how many nachos will be sold in 2 days? _____

7 Solve for the value of *x*.

$$\frac{11 + 7}{x} = 6$$

_____

8 Write the correct answer as an integer in the blank.

$1^2 + 2^3 =$ _____

9 Write these numbers in increasing order.

$2.2, \dfrac{-9}{4}, 4.2, \dfrac{6}{7}, -3.1$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a garden are 24 centimeters (cm) by 20 cm. The blueprint uses a scale of 1 cm = 2 meters (m). What are the actual dimensions of the garden?
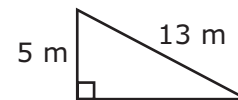
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$2^2 + 5^1 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 11.421×10^5

B 1.1421×10^6

C 114.21×10^4

_____

13 A ramp is constructed with the given dimensions. What is the width of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$10^2 - 4(3 - 1) - 20$

_____

15 Simplify the expression.

$7[2^2 - (3 - 2)10]$

_____

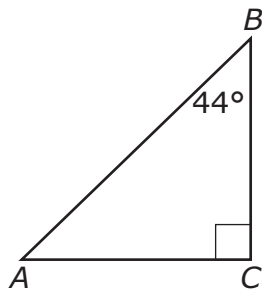**16** Solve for the value of x.

$$\frac{x + 13}{10} = 3$$

_____

17 A swimming pool contains 50,200 gallons of water. The pool is drained at a rate of 26 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $50{,}200 + 26x$

B $50{,}200 - 26x$

C $50{,}200x - 26$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^2)3^1$

_____

19 What is the measure of $\angle A$?

_____ °

20 The radius of an asteroid is 212,200 kilometers (km). What is the radius of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °
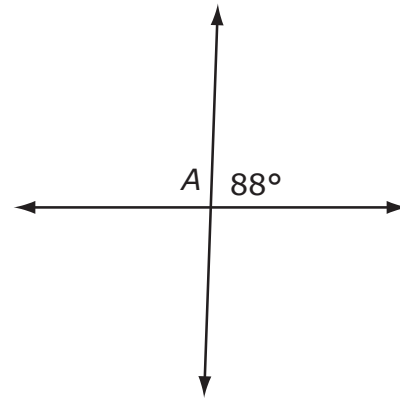
22 Write this number in scientific notation.

$11{,}639 = $ _____

23 An online store sells books for $5.45 each. For each order, there is a one-time shipping and handling fee of $2.50. Which expression represents the cost of ordering x books?

A $x + 5.45 + 2.50$

B $5.45x + 2.50$

C $(5.45 + 2.50)x$

_____

24 One leg of a right triangle is 18 centimeters (cm) long. The hypotenuse of this triangle is 30 cm long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ cm

25 Write the number as a decimal in standard form.

$2.6 \times 10^{-2} = $ _____

26 A bag contains 50 balls, 20 of which are green. Bruce takes a ball from the bag at random. What is the probability that he will take out a green ball? Express the answer as a percent.

_____ %

27 Noelle goes to the gym every 2 days and Jane goes to the same gym every 4 days. If they are together at the gym on Friday, what is the next day they will be together at the gym?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	150
5	160
10	170
15	180
20	190

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 150 °C.

B The temperature after 25 minutes will be higher than the temperature after 30 minutes.

C The temperature after 30 minutes will be 210 °C.

_____

Student: Teacher: Date:

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 18 Answer Key

Item No.	Answer	Correct	Incorrect
1.	707.007, 707.07, 707.70	1	0
2.	C	1	0
3.	5	1	0
4.	16	1	0
5.	10,286	1	0
6.	60	1	0
7.	3	1	0
8.	9	1	0
9.	$-3.1, \dfrac{-9}{4}, \dfrac{6}{7}, 2.2, 4.2$	2	0
10.	48, 40	1	0
11.	9	1	0
12.	B	1	0
13.	12	2	0
14.	72	2	0
15.	-42	2	0
16.	17	1	0
17.	B	1	0
18.	12	1	0
19.	46	2	0
20.	2.122×10^5	2	0
21.	92	2	0
22.	1.1639×10^4	2	0
23.	B	2	0
24.	24	2	0
25.	0.026	3	0
26.	40	2	0
27.	Tuesday	2	0
28.	C	1	0

Total [ ]

1 Order from least to greatest.

383.02, 383.20, 383.002

_____ < _____ < _____

2 The distance between two cities on a map is 5.1 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 51 km

B 510 km

C 5100 km

_____

3 Solve for the value of z.

$6z + 36 = 48$

_____

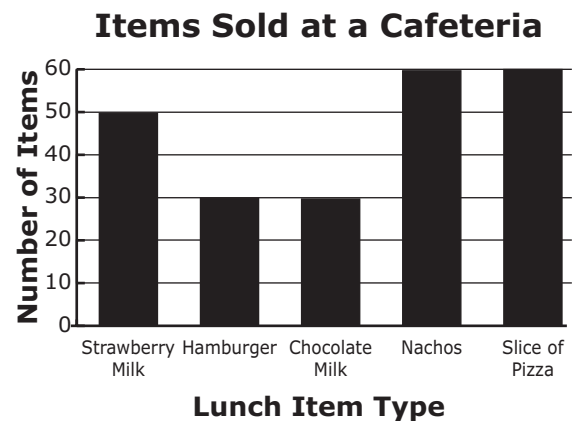**4** Fill in the missing number in this sequence.

13, 20, 27, _____, 41, 48

5

Television Sales	
Year	Televisions
1998	13,085
1999	15,425
2000	19,131
2001	23,871

How many more televisions were sold in 2001 than in 2000?

_____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many cartons of strawberry milk will be sold in 5 days? _____

7   Solve for the value of x.

$$\frac{3 + 7}{x} = 5$$

_____

8   Write the correct answer as an integer in the blank.

$2^2 + 1^{10} =$ _____

9   Write these numbers in increasing order.

2.4, $\frac{-2}{3}$, 3.1, $\frac{7}{8}$, -3.3

_____ _____ _____ _____ _____

10   On a blueprint, the dimensions of a park are 26 centimeters (cm) by 30 cm. The blueprint uses a scale of 1 cm = 6 meters (m). What are the actual dimensions of the park?

_____ m by _____ m

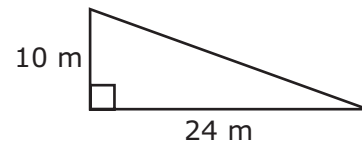**11**   Write the correct answer as an integer in the blank.

$3^3 + 1^{11} =$ _____

12   Which of these numbers is expressed properly in scientific notation?

A 4.1421×10^6

B 414.21×10^4

C 41.421×10^5

_____

13   A ramp is constructed with the given dimensions. What is the length of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14   Simplify the expression.

$3^3 + 3(2 - 2) - 6$

_____

15   Simplify the expression.

$6[16 - (4 - 1)2]$

_____

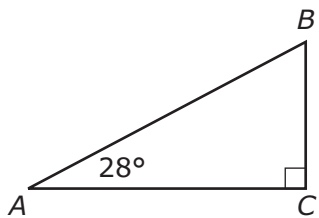**16**   Solve for the value of x.

$$\frac{x + 1}{2} = 11$$

_____

17 A swimming pool contains 11,500 gallons of water. The pool is drained at a rate of 11 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $11{,}500 + 11x$

B $11{,}500 - 11x$

C $11{,}500x - 11$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^1)9^1$

_____

19 What is the measure of $\angle B$?
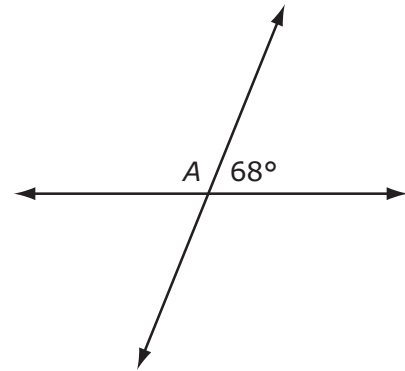
B

28°

A   C

_____ °

20 The diameter of an asteroid is 115,200 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

A / 68°

_____ °

22 Write this number in scientific notation.

$11{,}138 = $ _____

23 An online store sells bags for $11.95 each. For each order, there is a one-time shipping and handling fee of $1.50. Which expression represents the cost of ordering x bags?

A $x + 11.95 + 1.50$

B $11.95x + 1.50$

C $(11.95 + 1.50)x$

_____

24 One leg of a right triangle is 60 units long. The hypotenuse of this triangle is 61 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$6.7 \times 10^{-3} = $ _____

26 A bag contains 20 balls, 4 of which are red. Stephen takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

27 Tyler goes to his music class every 3 days and Josh goes to the same music class every 7 days. If they are together at the class on Monday, what is the next day they will be together at the music class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	100
5	80
10	60
15	40
20	20

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 0 °C.

B The temperature after 30 minutes will be 10 °C.

C The temperature after 30 minutes will be higher than the temperature after 25 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 19 Answer Key

Item No.	Answer	Correct	Incorrect
1.	383.002, 383.02, 383.20	1	0
2.	B	1	0
3.	2	1	0
4.	34	1	0
5.	4740	1	0
6.	250	1	0
7.	2	1	0
8.	5	1	0
9.	$-3.3, \dfrac{-2}{3}, \dfrac{7}{8}, 2.4, 3.1$	2	0
10.	156, 180	1	0
11.	28	1	0
12.	A	1	0
13.	26	2	0
14.	21	2	0
15.	60	2	0
16.	21	1	0
17.	B	1	0
18.	18	1	0
19.	62	2	0
20.	1.152×10^5	2	0
21.	112	2	0
22.	1.1138×10^4	2	0
23.	B	2	0
24.	11	2	0
25.	0.0067	3	0
26.	20	2	0
27.	Monday	2	0
28.	A	1	0

Total ☐

1 Order from least to greatest.

314.05, 314.50, 314.005

_____ < _____ < _____

2 The distance between two cities on a map is 5 centimeters (cm). The map uses a scale of 1 cm = 10 kilometers (km). How far apart are the cities?

A 5000 km

B 500 km

C 50 km

_____

3 Solve for the value of *n*.

$3n + 60 = 90$

_____

4 Fill in the missing number in this sequence.

2, 4, 8, _____, 32, 64

5

House Sales	
Year	Houses
2005	15,925
2006	16,145
2007	17,188
2008	18,110

How many more houses were sold in 2007 than in 2005? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
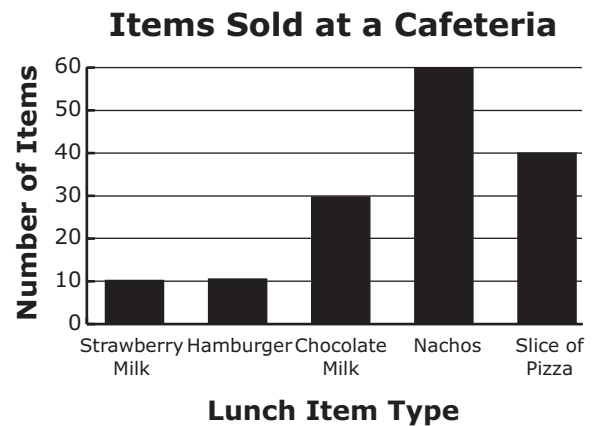
At this rate, how many cartons of chocolate milk will be sold in 4 days? _____

7 Solve for the value of x.

$$\frac{1 + 7}{x} = 8$$

_____

8 Write the correct answer as an integer in the blank.

$4^3 + 8^2 =$ _____

9 Write these numbers in increasing order.

$2.3, \frac{-1}{3}, 5.3, \frac{7}{5}, -7.4$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a swimming pool are 60 centimeters (cm) by 40 cm. The blueprint uses a scale of 1 cm = 1.5 meters (m). What are the actual dimensions of the pool?
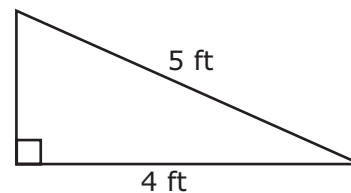
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$6^2 + 2^2 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 639.29×10^4

B 6.3929×10^6

C 63.929×10^5

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$3^2 + 3(6 - 2) - 6$

_____

15 Simplify the expression.

$2[32 - (4 - 2)6]$

_____

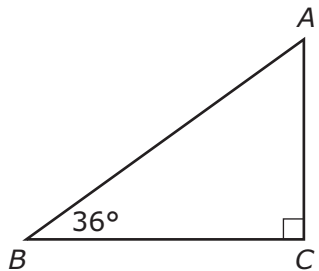**16**   Solve for the value of x.

$$\frac{x + 1}{2} = 9$$

_____

17   A pool contains 10,000 gallons of water. The pool is drained at a rate of 50 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $10{,}000 + 50x$

B $10{,}000x - 50$

C $10{,}000 - 50x$

_____

18   Simplify and write the answer as an integer in the blank.

$(5^3)2^2$

_____

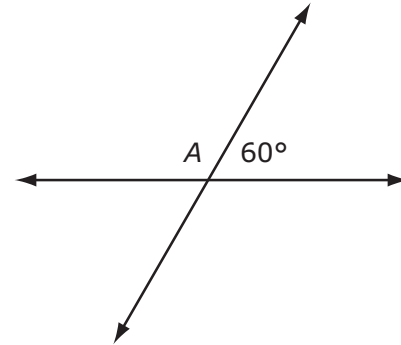**19**   What is the measure of $\angle A$?

_____ °

20   The radius of a planet is 134,000 kilometers (km). What is the radius of the planet in scientific notation?

_____ km

21   What is the measure of $\angle A$?

_____ °

22   Write this number in scientific notation.

$12{,}345 =$ _____

23   An online store sells birdhouses for $50.00 each. For each order, there is a one-time shipping and handling fee of $9.50. Which expression represents the cost of ordering x birdhouses?

A $x + 50.00 + 9.50$

B $50.00x + 9.50$

C $(50.00 + 9.50)x$

_____

24 One leg of a right triangle is 9 units long. The hypotenuse of this triangle is 41 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$1.9 \times 10^{-5} =$ _____

26 A basket contains 20 bananas, 5 of which have bruises. Michael takes a banana from the basket at random. What is the probability that he will take out a banana <u>without</u> bruises? Express the answer as a percent.

_____ %

27 Deedra goes to her health club every 2 days and Julia goes to the same health club every 4 days. If they are together at the health club on Monday, what is the next day they will be together at the health club?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	150
25	300
50	450
75	600
100	750

Based on the above data, which of these is the most likely to be correct?

A The temperature after 175 minutes will be 1050 °C.

B The temperature after 150 minutes will be 300 °C.

C The temperature after 150 minutes will be higher than the temperature after 175 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 20 Answer Key

Item No.	Answer	Correct	Incorrect
1.	314.005, 314.05, 314.50	1	0
2.	C	1	0
3.	10	1	0
4.	16	1	0
5.	1263	1	0
6.	120	1	0
7.	1	1	0
8.	128	1	0
9.	$-7.4, \dfrac{-1}{3}, \dfrac{7}{5}, 2.3, 5.3$	2	0
10.	90, 60	1	0
11.	40	1	0
12.	B	1	0
13.	3	2	0
14.	15	2	0
15.	40	2	0
16.	17	1	0
17.	C	1	0
18.	500	1	0
19.	54	2	0
20.	1.34×10^5	2	0
21.	120	2	0
22.	1.2345×10^4	2	0
23.	B	2	0
24.	40	2	0
25.	0.000019	3	0
26.	75	2	0
27.	Friday	2	0
28.	A	1	0

Total [ ]

1 Order from least to greatest.

129.06, 129.60, 129.006

_____ < _____ < _____

2 The distance between two cities on a map is 3.5 centimeters (cm). The map uses a scale of 1 cm = 10 kilometers (km). How far apart are the cities?

A 35 km

B 350 km

C 3500 km

_____

3 Solve for the value of *n*.

$2n + 40 = 70$

_____

4 Fill in the missing number in this sequence.

4, 8, 13, _____, 26, 34

5

House Sales	
Year	Houses
1998	19,785
1999	20,585
2000	21,478
2001	22,892

How many more houses were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
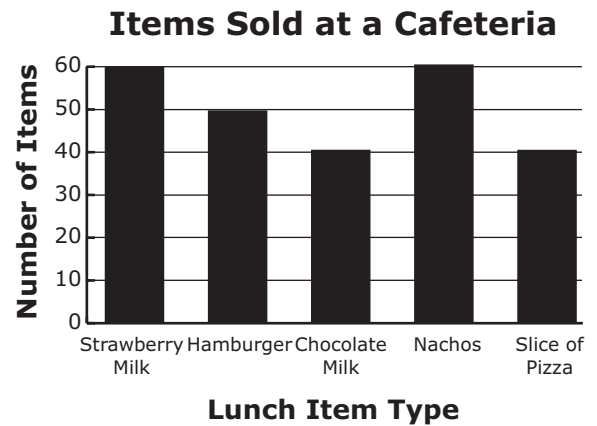
At this rate, how many cartons of chocolate milk will be sold in 4 days? _____

7 Solve for the value of *x*.

$$\frac{3 + 12}{x} = 3$$

_____

8 Write the correct answer as an integer in the blank.

$3^3 + 7^2 =$ _____

9 Write these numbers in increasing order.

$0.2, \frac{-9}{2}, 4.3, \frac{7}{3}, -3.4$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a swimming pool are 45 centimeters (cm) by 32 cm. The blueprint uses a scale of 1 cm = 2 meters (m). What are the actual dimensions of the pool?
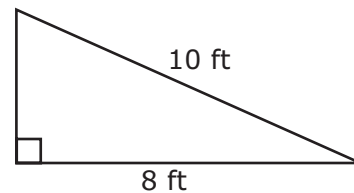
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$2^3 + 4^2 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 11.523×10^5

B 115.23×10^4

C 1.1523×10^6

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$25 + 4^2 (3 - 2) - 1$

_____

15 Simplify the expression.

$4[20 - (4 - 2)6]$

_____

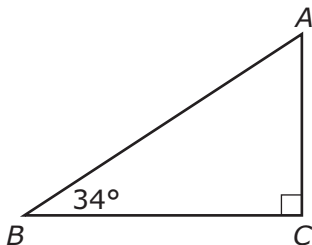**16** Solve for the value of x.

$$\frac{x+1}{2} = 18$$

_____

17 A swimming pool contains 40,000 gallons of water. The pool is drained at a rate of 150 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $40,000 - 150x$

B $40,000 + 150x$

C $40,000x - 150$

_____

18 Simplify and write the answer as an integer in the blank.

$(3^4)2^2$

_____
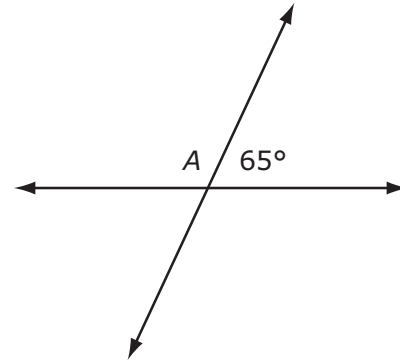
19 What is the measure of $\angle A$?

_____ °

20 The radius of a planet is 173,500 kilometers (km). What is the radius of the planet in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °

22 Write this number in scientific notation.

$12,631 =$ _____

23 An online store sells birdhouses for $52.95 each. For each order, there is a one-time shipping and handling fee of $9.50. Which expression represents the cost of ordering x birdhouses?

A $x + 52.95 + 9.50$

B $52.95x + 9.50$

C $(52.95 + 9.50)x$

_____

24 One leg of a right triangle is 3 units long. The hypotenuse of this triangle is 5 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$2.9 \times 10^{-4} = $ _____

26 A basket contains 10 apples, 5 of which have worms. James takes an apple from the basket at random. What is the probability that he will take out an apple <u>without</u> worms? Express the answer as a percent.

_____ %

27 April goes to her health club every 4 days and Annie goes to the same health club every 5 days. If they are together at the health club on Wednesday, what is the next day they will be together at the health club?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	160
25	320
50	480
75	640
100	800

Based on the above data, which of these is the most likely to be correct?

A The temperature after 150 minutes will be 300 °C.

B The temperature after 175 minutes will be 1240 °C.

C The temperature after 130 minutes will be higher than the temperature after 160 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 21 Answer Key

Item No.	Answer	Correct	Incorrect
1.	129.006, 129.06, 129.60	1	0
2.	A	1	0
3.	15	1	0
4.	19	1	0
5.	1414	1	0
6.	160	1	0
7.	5	1	0
8.	76	1	0
9.	$\frac{-9}{2}$, -3.4, 0.2, $\frac{7}{3}$, 4.3	2	0
10.	90, 64	1	0
11.	24	1	0
12.	C	1	0
13.	6	2	0
14.	40	2	0
15.	32	2	0
16.	35	1	0
17.	A	1	0
18.	324	1	0
19.	56	2	0
20.	1.735×10^5	2	0
21.	115	2	0
22.	1.2631×10^4	2	0
23.	B	2	0
24.	4	2	0
25.	0.00029	3	0
26.	50	2	0
27.	Tuesday	2	0
28.	B	1	0

Total [ ]

1 2 3 4 5 6 7 8 9 10 11 12 A B C D E

1 Order from least to greatest.

788.08, 788.80, 788.008

_____ < _____ < _____

2 The distance between two airports on a map is 7.9 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the airports?

A 790 km

B 79 km

C 7900 km

_____

3 Solve for the value of n.

$2n + 57 = 63$

_____

4 Fill in the missing number in this sequence.

4, 14, 24, _____, 44, 54

5

Laptop Sales	
Year	Laptops
1998	19,285
1999	21,325
2000	25,631
2001	29,571

How many more laptops were sold in 2001 than in 1999? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.
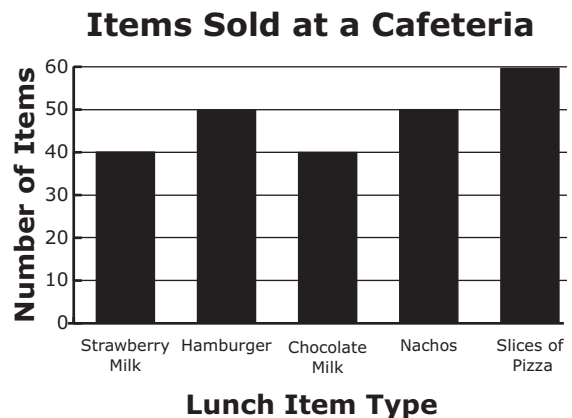
Items Sold at a Cafeteria

At this rate, how many cartons of strawberry milk will be sold in 4 days? _____

7 Solve for the value of *x*.

$$\frac{14 + 6}{x} = 4$$

_____

8 Write the correct answer as an integer in the blank.

$3^2 + 6^2 =$ _____

9 Write these numbers in increasing order.

$2.9, \dfrac{-8}{5}, 3.6, \dfrac{2}{7}, -3.8$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a park are 16 centimeters (cm) by 27 cm. The blueprint uses a scale of 1 cm = 5 meters (m). What are the actual dimensions of the park?
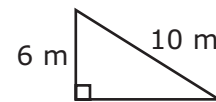
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$10^2 + 6^2 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 844.65×10^4

B 8.4465×10^6

C 84.465×10^5

_____

13 A ramp is constructed with the given dimensions. What is the width of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$7^2 + 7(7 - 6) - 6$

_____

15 Simplify the expression.

$7[2^3 - (4 - 3)2]$

_____

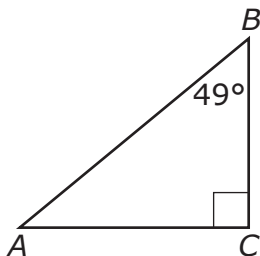**16** Solve for the value of *x*.

$$\frac{x + 5}{6} = 3$$

_____

17 A swimming pool contains 15,150 gallons of water. The pool is drained at a rate of 51 gallons per minute. Which expression represents the amount of water in the pool after *x* minutes?

A $15{,}150x - 51$

B $15{,}150 - 51x$

C $15{,}150 + 51x$

_____

18 Simplify and write the answer as an integer in the blank.

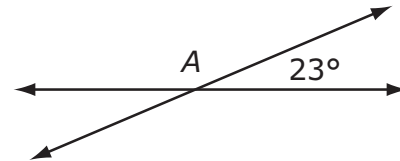$(3^2)4^2$

_____

19 What is the measure of ∠*A*?

_____°

20 The diameter of an asteroid is 187,900 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of ∠*A*?

_____°

22 Write this number in scientific notation.

$24{,}642 = $ _____

23 An online store sells books for $14.45 each. For each order, there is a one-time shipping and handling fee of $3.55. Which expression represents the cost of ordering *x* books?

A $x + 14.45 + 3.55$

B $14.45x + 3.55$

C $(14.45 + 3.55)x$

_____

24 One leg of a right triangle is 15 meters (m) long. The hypotenuse of this triangle is 25 m long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ m

25 Write the number as a decimal in standard form.

$5.9 \times 10^{-3} =$ _____

26 A bag contains 44 balls, 11 of which are red Thomas takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

27 Jaiden goes to the post office every 4 days and Gillian goes to the same post office every 3 days. If they are together at the post office on Tuesday, what is the next day they will be together at the post office?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	10
5	30
10	50
15	70
20	90

Based on the above data, which of these is the most likely to be correct?

A The temperature after 30 minutes will be 100 °C.

B The temperature after 25 minutes will be 110 °C.

C The temperature after 25 minutes will be higher than the temperature after 30 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 22 Answer Key

Item No.	Answer	Correct	Incorrect
1.	788.008, 788.08, 788.80	1	0
2.	A	1	0
3.	3	1	0
4.	34	1	0
5.	8246	1	0
6.	160	1	0
7.	5	1	0
8.	45	1	0
9.	$-3.8, \dfrac{-8}{5}, \dfrac{2}{7}, 2.9, 3.6$	2	0
10.	80, 135	1	0
11.	136	1	0
12.	B	1	0
13.	8	2	0
14.	50	2	0
15.	42	2	0
16.	13	1	0
17.	B	1	0
18.	144	1	0
19.	41	2	0
20.	1.879×10^5	2	0
21.	157	2	0
22.	2.4642×10^4	2	0
23.	B	2	0
24.	20	2	0
25.	0.0059	3	0
26.	25	2	0
27.	Sunday	2	0
28.	B	1	0

Total ☐

1 Order from least to greatest.

263.06, 263.60, 263.006

_____ < _____ < _____

---

2 The distance between two cities on a map is 9.8 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 980 km

B 9800 km

C 98 km

_____

---

3 Solve for the value of m.

$2m + 22 = 44$

_____

---

4 Fill in the missing number in this sequence.

13, 23, 33, _____, 53, 63

5

Laptop Sales	
Year	Laptops
1998	15,685
1999	16,725
2000	18,831
2001	20,971

How many more laptops were sold in 2001 than in 2000? _____

---

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
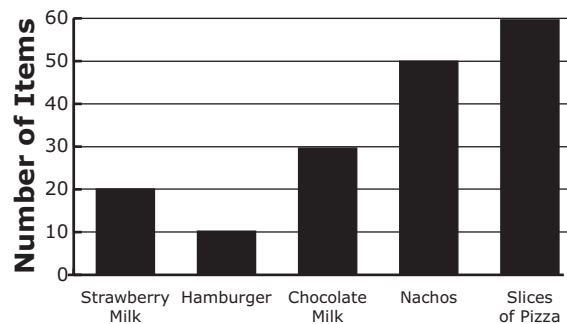
At this rate, how many hamburgers will be sold in 4 days? _____

---

7   Solve for the value of *x*.

$$\frac{15 + 3}{x} = 3$$

_____

8   Write the correct answer as an integer in the blank.

$3^2 + 5^2 =$ _____

9   Write these numbers in increasing order.

$4.4, \dfrac{-9}{5}, 6.1, \dfrac{3}{8}, {}^{-}5.1$

_____ _____ _____ _____ _____

10   On a blueprint, the dimensions of a park are 35 centimeters (cm) by 21 cm. The blueprint uses a scale of 1 cm = 5 meters (m). What are the actual dimensions of the park?

_____ m   by   _____ m

11   Write the correct answer as an integer in the blank.

$4^3 + 3^1 =$ _____

12   Which of these numbers is expressed properly in scientific notation?

A 441.59×10^4

B 4.4159×10^6

C 44.159×10^5

_____

13   A ramp is constructed with the given dimensions. What is the width of the ramp?

18 m   30 m

Note: $c^2 = a^2 + b^2$

_____ m

14   Simplify the expression.

$6^3 - 4(2 - 2) - 6$

_____

15   Simplify the expression.

$7[2^3 - (5 - 4)2]$

_____

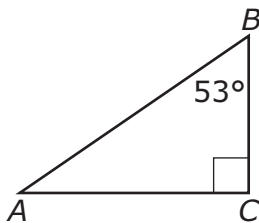**16** Solve for the value of x.

$$\frac{x+5}{5}=5$$

_____

17 A swimming pool contains 66,360 gallons of water. The pool is drained at a rate of 33 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $66{,}360-33x$

B $66{,}360+33x$

C $66{,}360x-33$

_____

18 Simplify and write the answer as an integer in the blank.

$(5^3)5^1$

_____
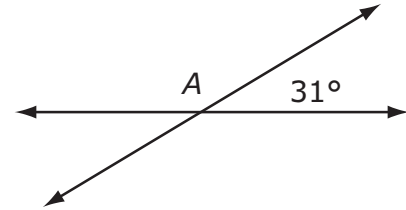
19 What is the measure of $\angle A$?

_____ °

20 The diameter of an asteroid is 129,260 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °

22 Write this number in scientific notation.

$16{,}215 =$ _____

23 An online store sells books for $15.95 each. For each order, there is a one-time shipping and handling fee of $6.50. Which expression represents the cost of ordering x books?

A $x+15.95+6.50$

B $(15.95+6.50)x$

C $15.95x+6.50$

_____

24 One leg of a right triangle is 10 meters (m) long. The hypotenuse of this triangle is 26 m long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ m

25 Write the number as a decimal in standard form.

$9.6 \times 10^{-3} =$ _____

26 A bag contains 40 balls, 4 of which are red. Seamus takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

27 Joyce goes to a music class every 4 days and Kathy goes to the same music class every 8 days. If they are together at the class on Friday, what is the next day they will be together at the music class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	45
5	65
10	85
15	105
20	125

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 145 °C.

B The temperature after 30 minutes will be 120 °C.

C The temperature after 25 minutes will be higher than the temperature after 30 minutes.

_____

Student: Teacher: Date:
_____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 23 Answer Key

Item No.	Answer	Correct	Incorrect
1.	263.006, 263.06, 263.60	1	0
2.	A	1	0
3.	11	1	0
4.	43	1	0
5.	2140	1	0
6.	40	1	0
7.	6	1	0
8.	34	1	0
9.	$-5.1, \dfrac{-9}{5}, \dfrac{3}{8}, 4.4, 6.1$	2	0
10.	175, 105	1	0
11.	67	1	0
12.	B	1	0
13.	24	2	0
14.	210	2	0
15.	42	2	0
16.	20	1	0
17.	A	1	0
18.	625	1	0
19.	37	2	0
20.	1.2926×10^5	2	0
21.	149	2	0
22.	1.6215×10^4	2	0
23.	C	2	0
24.	24	2	0
25.	0.0096	3	0
26.	10	2	0
27.	Saturday	2	0
28.	A	1	0

Total ☐

1 Order from least to greatest.

281.01, 281.10, 281.001

_____ < _____ < _____

2 The distance between two cities on a map is 1.8 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 18 km

B 1800 km

C 180 km

_____

3 Solve for the value of *n*.

$3n + 60 = 90$

_____

4 Fill in the missing number in this sequence.

1, 9, 17, _____, 33, 41

5

Television Sales	
Year	Televisions
1998	15,085
1999	17,425
2000	21,131
2001	25,871

How many more televisions were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
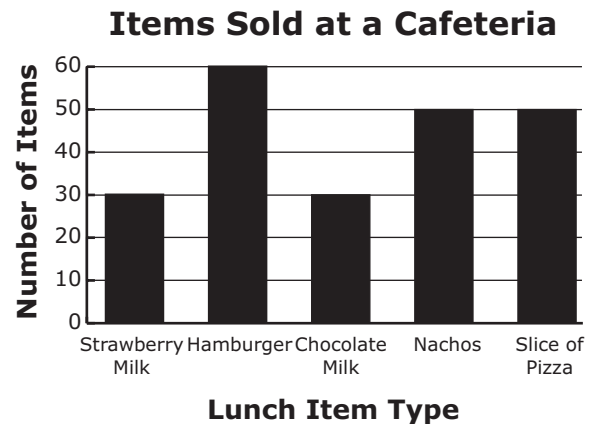
At this rate, how many slices of pizza will be sold in 4 days? _____

7 Solve for the value of *x*.

$$\frac{13 + 15}{x} = 4$$

_____

8 Write the correct answer as an integer in the blank.

$2^2 + 8^3 =$ _____

9 Write these numbers in increasing order.

$0.5, \dfrac{-9}{2}, 2.6, \dfrac{3}{7}, -1.5$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a park are 30 centimeters (cm) by 31 cm. The blueprint uses a scale of 1 cm = 10 meters (m). What are the actual dimensions of the park?
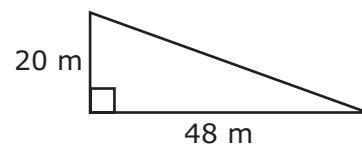
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$9^3 + 1^{100} =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 420.98×10^4

B 4.2098×10^6

C 42.098×10^5

_____

13 A ramp is constructed with the given dimensions. What is the length of the ramp?

20 m

48 m

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$4^3 + 2(7 - 7) - 6$

_____

15 Simplify the expression.

$5[1^4 - (9 - 8)2]$

_____

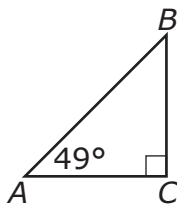**16** Solve for the value of x.

$$\frac{x + 1}{1} = 26$$

_____

17 A swimming pool contains 20,200 gallons of water. The pool is drained at a rate of 10 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $20,200x - 10$

B $20,200 - 10x$

C $20,200 + 10x$

_____

18 Simplify and write the answer as an integer in the blank.

$(1^{50})2^4$

_____

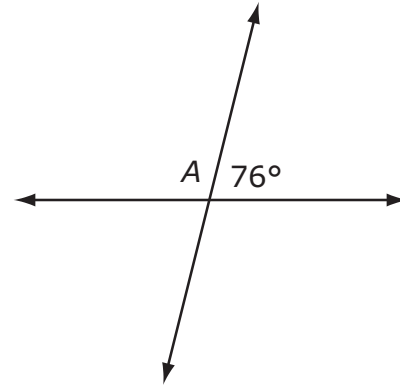**19** What is the measure of $\angle B$?

_____ °

20 The diameter of an asteroid is 224,300 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °

22 Write this number in scientific notation.

$11,448 = $ _____

23 An online store sells bags for $93.00 each. For each order, there is a one-time shipping and handling fee of $1.50. Which expression represents the cost of ordering x bags?

A $x + 93.00 + 1.50$

B $(93.00 + 1.50)x$

C $93.00x + 1.50$

_____

24 One leg of a right triangle is 40 units long and its other leg is 9 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$7.1 \times 10^{-3} =$ _____

26 A bag contains 25 balls, 13 of which are blue. Charlie takes a ball from the bag at random. What is the probability that he will take out a blue ball? Express the answer as a percent.

_____ %

27 Deborah goes to her hobby class every 4 days and Mariah goes to the same hobby class every 2 days. If they are together at the class on Friday, what is the next day they will be together at the hobby class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	110
5	90
10	70
15	50
20	30

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 10 °C.

B The temperature after 30 minutes will be 60 °C.

C The temperature after 30 minutes will be higher than the temperature after 25 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 24 Answer Key

Item No.	Answer	Correct	Incorrect
1.	281.001, 281.01, 281.10	1	0
2.	C	1	0
3.	10	1	0
4.	25	1	0
5.	4740	1	0
6.	200	1	0
7.	7	1	0
8.	516	1	0
9.	$\frac{-9}{2}$, -1.5, $\frac{3}{7}$, 0.5, 2.6	2	0
10.	300, 310	1	0
11.	730	1	0
12.	B	1	0
13.	52	2	0
14.	58	2	0
15.	-5	2	0
16.	25	1	0
17.	B	1	0
18.	16	1	0
19.	41	2	0
20.	2.243×10^5	2	0
21.	104	2	0
22.	1.1448×10^4	2	0
23.	C	2	0
24.	41	2	0
25.	0.0071	3	0
26.	52	2	0
27.	Tuesday	2	0
28.	A	1	0

Total [   ]

1   Order from least to greatest.

133.05, 133.50, 133.005

_____ < _____ < _____

2   The distance between two cities on a map is 95 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A   95 km

B   950 km

C   9500 km

_____

3   Solve for the value of n.

$8n + 16 = 96$

_____

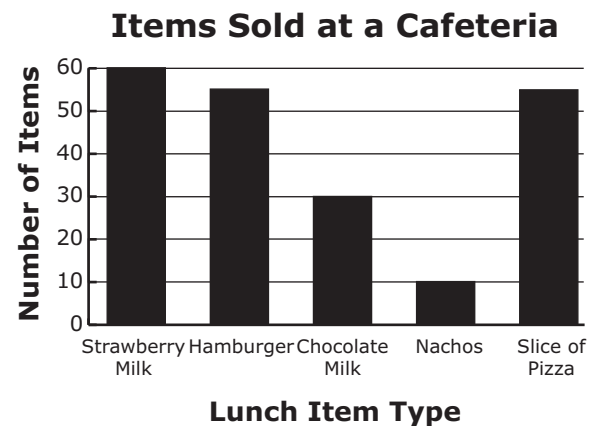**4**   Fill in the missing number in this sequence.

35, 30, 25, _____, 15, 10

5

Car Sales	
Year	Cars
1999	45,187
2000	51,786
2001	60,521
2002	66,958

How many more cars were sold in 2002 than in 2001? _____

6   The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many nachos will be sold in 5 days? _____

7   Solve for the value of *x*.

$$\frac{25 - 1}{x} = 6$$

_____

8   Write the correct answer as an integer in the blank.

$1^{10} + 2^3 =$ _____

9   Write these numbers in increasing order.

$0.7, \ \frac{-7}{5}, \ 7.8, \ \frac{7}{4}, \ -1.7$

_____ _____ _____ _____ _____

10   On a blueprint, the dimensions of a swimming pool are 10 centimeters (cm) by 12 cm. The blueprint uses a scale of 1 cm = 5 meters (m). What are the actual dimensions of the pool?
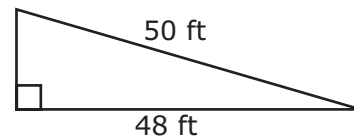
_____ m by _____ m

11   Write the correct answer as an integer in the blank.

$5^3 + 6^1 =$ _____

12   Which of these numbers is expressed properly in scientific notation?

A 33.429×10^5

B 3.3429×10^6

C 334.29×10^4

_____

13   A ramp is constructed with the given dimensions. What is the height of the ramp?

Note: $c^2 = a^2 + b^2$

_____ ft

14   Simplify the expression.

$9^2 + 1(4 - 3) - 1$

_____

15   Simplify the expression.

$1[75 - (5 - 1)6]$

_____

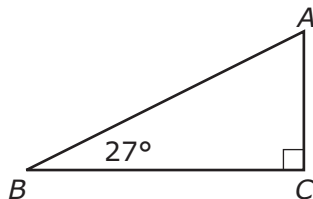**16** Solve for the value of *x*.

$$\frac{x + 13}{1} = 1$$

_____

17 A lake contains 99,000 gallons of water. Water is pumped into the lake at a rate of 100 gallons per minute. Which expression represents the amount of water in the lake after *x* minutes?

A $99,000 - 100x$

B $99,000 + 100x$

C $99,000x - 100$

_____

18 Simplify and write the answer as an integer in the blank.

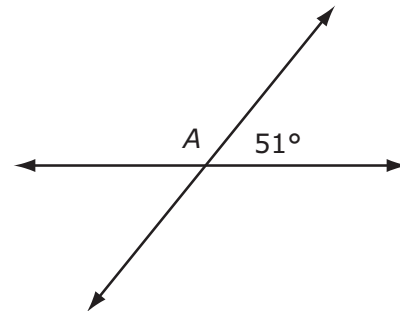$(4^3)5^2$

_____

19 What is the measure of ∠*A*?

_____°

20 The radius of an asteroid is 25,559 meters (m). What is the radius of the asteroid in scientific notation?

_____ m

21 What is the measure of ∠*A*?

_____°

22 Write this number in scientific notation.

$99,999 =$ _____

23 An online store sells laptops for $600.00 each. For each order, there is a one-time shipping and handling fee of $50.00. Which expression represents the cost of ordering *x* laptops?

A $600.00x + 50.00$

B $(600.00 + 50.00)x$

C $x + 600.00 + 50.00$

_____

24 One leg of a right triangle is 13 units long. The hypotenuse of this triangle is 85 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$4.999 \times 10^{-1} =$ _____

26 A basket contains 16 apples, 12 of which are green. Brad takes an apple from the basket at random. What is the probability that he will take out a green apple? Express the answer as a percent.

_____ %

27 Andre goes to the grocery store every day and Brady goes to the same grocery store every 2 days. If they are together at the grocery store on Monday, what is the next day they will be together at the grocery store?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	900
10	700
20	500
30	300
40	100

Based on the above data, which of these is the most likely to be correct?

A The temperature after 60 minutes will be ⁻300 °C.

B The temperature after 50 minutes will be 200 °C.

C The temperature after 50 minutes will be higher than the temperature after 40 minutes.

_____

Student: Teacher: Date:

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 25 Answer Key

Item No.	Answer	Correct	Incorrect
1.	133.005, 133.05, 133.50	1	0
2.	C	1	0
3.	10	1	0
4.	20	1	0
5.	6437	1	0
6.	50	1	0
7.	4	1	0
8.	9	1	0
9.	$-1.7, \dfrac{-7}{5}, 0.7, \dfrac{7}{4}, 7.8$	2	0
10.	50, 60	1	0
11.	131	1	0
12.	B	1	0
13.	14	2	0
14.	81	2	0
15.	51	2	0
16.	-2	1	0
17.	B	1	0
18.	1600	1	0
19.	63	2	0
20.	2.5559×10^4	2	0
21.	129	2	0
22.	9.9999×10^4	2	0
23.	A	2	0
24.	84	2	0
25.	0.4999	3	0
26.	75	2	0
27.	Wednesday	2	0
28.	A	1	0

Total [ ]

1 Order from least to greatest.

232.03, 232.30, 232.003

_____ < _____ < _____

2 The distance between two cities on a map is 2.6 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 26 km

B 260 km

C 2600 km

_____

3 Solve for the value of n.

$2n + 66 = 98$

_____

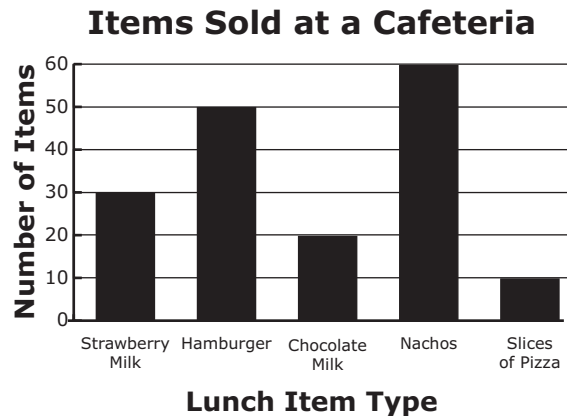**4** Fill in the missing number in this sequence.

13, 16, 19, _____, 25, 28

5

Laptop Sales	
Year	Laptops
1998	19,485
1999	21,525
2000	25,631
2001	29,771

How many more laptops were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many hamburgers will be sold in 5 days? _____

7   Solve for the value of *x*.

$$\frac{4 + 5}{x} = 3$$

_____

8   Write the correct answer as an integer in the blank.

$4^2 + 8^2 =$ _____

9   Write these numbers in increasing order.

$3.2, \dfrac{-6}{5}, 4.4, \dfrac{3}{5}, -4.4$

____   ____   ____   ____   ____

10   On a blueprint, the dimensions of a park are 16 centimeters (cm) by 28 cm. The blueprint uses a scale of 1 cm = 5 meters (m). What are the actual dimensions of the park?
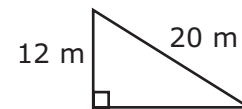
_____ m   by   _____ m

11   Write the correct answer as an integer in the blank.

$2^4 + 3^1 =$ _____

12   Which of these numbers is expressed properly in scientific notation?

    A 9.7423×10^6

    B 97.423×10^5

    C 974.23×10^4

_____

13   A ramp is constructed with the given dimensions. What is the width of the ramp?

12 m   20 m

Note: $c^2 = a^2 + b^2$

_____ m

14   Simplify the expression.

$2^3 + 3(5 - 2) - 3$

_____

15   Simplify the expression.

$3[2^2 - (3 - 2)4]$

_____

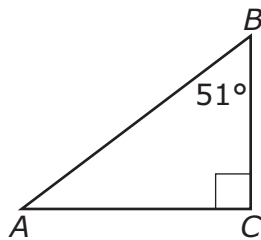**16** Solve for the value of x.

$$\frac{x+5}{3} = 3$$

_____

17 A swimming pool contains 16,400 gallons of water. The pool is drained at a rate of 42 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $16,400 - 42x$

B $16,400 + 42x$

C $16,400x - 42$

_____

18 Simplify and write the answer as an integer in the blank.

$(3^3)4^1$

_____

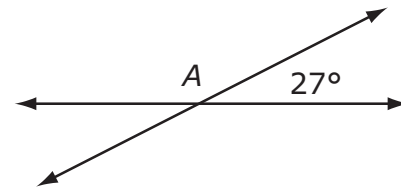**19** What is the measure of $\angle A$?

_____ °

20 The radius of an asteroid is 184,840 kilometers (km). What is the radius of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____°

22 Write this number in scientific notation.

$53,789 =$ _____

23 An online store sells books for $17.45 each. For each order, there is a one-time shipping and handling fee of $3.40. Which expression represents the cost of ordering x books?

A $x + 17.45 + 3.40$

B $17.45x + 3.40$

C $(17.45 + 3.40)x$

_____

24 One leg of a right triangle is 7 inches (in.) long. The hypotenuse of this triangle is 25 in. long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ in.

25 Write the number as a decimal in standard form.

$1.4 \times 10^{-2} =$ _____

26 A bag contains 34 balls, 17 of which are red Simon takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

27 Claudia goes to the grocery store every 2 days and Selena goes to the same grocery store every 6 days. If they are together at the store on Tuesday, what is the next day they will be together at the grocery store?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	50
5	70
10	90
15	110
20	130

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 150 °C.

B The temperature after 30 minutes will be 120 °C.

C The temperature after 25 minutes will be higher than the temperature after 30 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 26 Answer Key

Item No.	Answer	Correct	Incorrect
1.	232.003, 232.03, 232.30	1	0
2.	B	1	0
3.	16	1	0
4.	22	1	0
5.	4140	1	0
6.	250	1	0
7.	3	1	0
8.	80	1	0
9.	$-4.4, \dfrac{-6}{5}, \dfrac{3}{5}, 3.2, 4.4$	2	0
10.	80, 140	1	0
11.	19	1	0
12.	A	1	0
13.	16	2	0
14.	14	2	0
15.	0	2	0
16.	4	1	0
17.	A	1	0
18.	108	1	0
19.	39	2	0
20.	1.8484×10^5	2	0
21.	153	2	0
22.	5.3789×10^4	2	0
23.	B	2	0
24.	24	2	0
25.	0.014	3	0
26.	50	2	0
27.	Monday	2	0
28.	A	1	0

Total [ ]

1 Order from least to greatest.

143.03, 143.30, 143.003

_____ < _____ < _____

2 The distance between two towns on a map is 1.4 centimeters (cm). The map uses a scale of 1 cm = 10 kilometers (km). How far apart are the towns?

A 14 km

B 140 km

C 1400 km

_____

3 Solve for the value of *n*.

$2n + 24 = 34$

_____

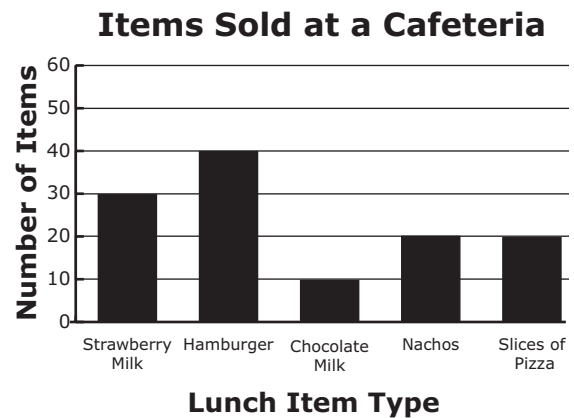**4** Fill in the missing number in this sequence.

3, 14, 25, _____, 47, 58

5

Laptop Sales	
Year	Laptops
1998	19,385
1999	21,425
2000	25,731
2001	29,671

How many more laptops were sold in 2000 than in 1998? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many hamburgers will be sold in 5 days? _____

7 Solve for the value of x.

$$\frac{4 + 6}{x} = 10$$

_____

8 Write the correct answer as an integer in the blank.

$6^2 + 7^2 =$ _____

9 Write these numbers in increasing order.

$3.1, \dfrac{-8}{7}, 4.3, \dfrac{2}{9}, -4.5$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a field are 21 centimeters (cm) by 31 cm. The blueprint uses a scale of 1 cm = 10 meters (m). What are the actual dimensions of the field?
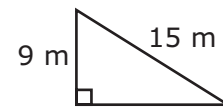
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$3^3 + 11^1 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 176.21×10^4

B 1.7621×10^6

C 17.621×10^5

_____

13 A ramp is constructed with the given dimensions. What is the width of the ramp?

9 m   15 m

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$2^3 + 4(2 - 2) - 1$

_____

15 Simplify the expression.

$4[3^2 - (1 - 1)2]$

_____

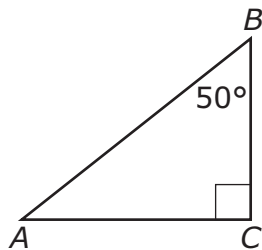**16** Solve for the value of x.

$$\frac{x + 7}{1} = 8$$

_____

17 A swimming pool contains 21,000 gallons of water. The pool is drained at a rate of 5 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $21,000 + 5x$

B $21,000 - 5x$

C $21,000x - 5$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^5)11^1$

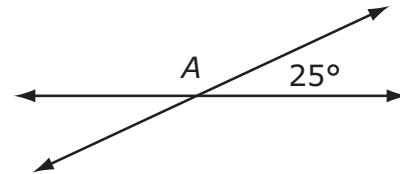_____

19 What is the measure of $\angle A$?

_____ °

20 The diameter of an asteroid is 714,200 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____°

22 Write this number in scientific notation.

$15,137 = $ _____

23 An online store sells novels for \$11.25 each. For each order, there is a one-time shipping and handling fee of \$1.50. Which expression represents the cost of ordering x novels?

A $x + 11.25 + 1.50$

B $(11.25 + 1.50)x$

C $11.25x + 1.50$

_____

24 One leg of a right triangle is 16 units long and the other leg of this triangle is 12 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$0.6 \times 10^{-3} =$ _____

26 A bag contains 50 balls, 15 of which are yellow. Clarence takes a ball from the bag at random. What is the probability that he will take out a yellow ball? Express the answer as a percent.

_____ %

27 Toni goes to the library every 2 days and Laurel goes to the same library every 5 days. If they are together at the library on Sunday, what is the next day they will be together at the library?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	30
5	50
10	70
15	90
20	110

Based on the above data, which of these is the most likely to be correct?

A The temperature after 25 minutes will be 100 °C.

B The temperature after 30 minutes will be 105 °C.

C The temperature after 30 minutes will be higher than the temperature after 25 minutes.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 27 Answer Key

Item No.	Answer	Correct	Incorrect
1.	143.003, 143.03, 143.30	1	0
2.	A	1	0
3.	5	1	0
4.	36	1	0
5.	6346	1	0
6.	200	1	0
7.	1	1	0
8.	85	1	0
9.	$-4.5, \dfrac{-8}{7}, \dfrac{2}{9}, 3.1, 4.3$	2	0
10.	210, 310	1	0
11.	38	1	0
12.	B	1	0
13.	12	2	0
14.	7	2	0
15.	36	2	0
16.	1	1	0
17.	B	1	0
18.	352	1	0
19.	40	2	0
20.	7.142×10^5	2	0
21.	155	2	0
22.	1.5137×10^4	2	0
23.	C	2	0
24.	20	2	0
25.	0.0006	3	0
26.	30	2	0
27.	Wednesday	2	0
28.	C	1	0

Total [　　]

1 Order from least to greatest.

124.09, 124.90, 124.009

_____ < _____ < _____

---

2 The distance between two cities on a map is 1.3 centimeters (cm). The map uses a scale of 1 cm = 50 kilometers (km). How far apart are the cities?

A 6500 km

B 650 km

C 65 km

_____

---

3 Solve for the value of n.

$2n + 48 = 96$

_____

---

4 Fill in the missing number in this sequence.

7, 10, 13, _____, 19, 22

5

Laptop Sales	
Year	Laptops
1998	19,685
1999	21,725
2000	25,831
2001	29,971

How many more laptops were sold in 2001 than in 2000? _____

---

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many hamburgers will be sold in 5 days? _____

---
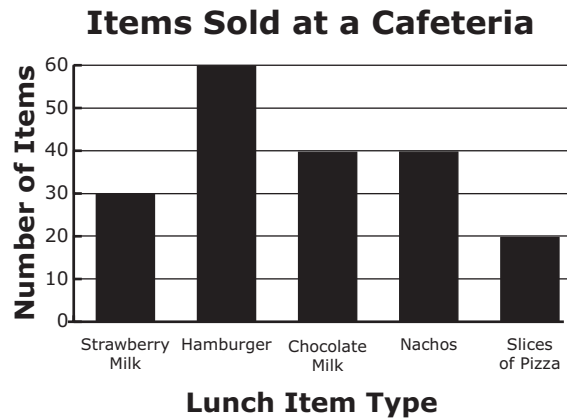
7 Solve for the value of *x*.

$$\frac{4 + 19}{x} = 23$$

_____

8 Write the correct answer as an integer in the blank.

$2^2 + 11^2 =$ _____

9 Write these numbers in increasing order.

$3.3, \frac{-9}{2}, 4.5, \frac{3}{7}, -4.2$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a park are 20 centimeters (cm) by 30 cm. The blueprint uses a scale of 1 cm = 11 meters (m). What are the actual dimensions of the park?
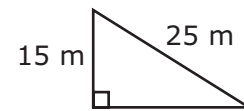
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$3^3 + 13^1 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 88.428×10^5

B 884.28×10^4

C 8.8428×10^6

_____

13 A ramp is constructed with the given dimensions. What is the width of the ramp?

15 m ⟍ 25 m

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$4^3 + 1(2 - 2) - 1$

_____

15 Simplify the expression.

$3[1^4 + (4 - 1)3]$

_____

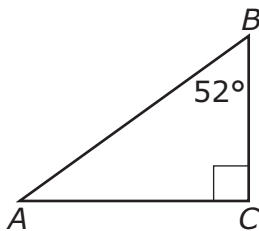**16** Solve for the value of x.

$$\frac{x + 7}{1} = 19$$

_____

17 A pond contains 71,000 gallons of water. The pond is drained at a rate of 71 gallons per minute. Which expression represents the amount of water in the pond after x minutes?

A $71{,}000x - 71$

B $71{,}000 + 71x$

C $71{,}000 - 71x$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^5)13^1$

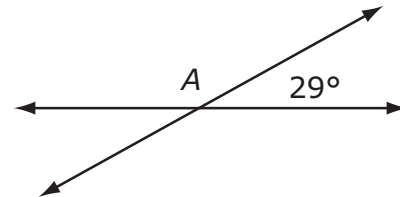_____

19 What is the measure of $\angle A$?

_____°

20 The diameter of an asteroid is 123,200 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____°

22 Write this number in scientific notation.

$36{,}149 = $ _____

23 An online store sells bags for $49.95 each. For each order, there is a one-time shipping and handling fee of $1.50. Which expression represents the cost of ordering x bags?

A $x + 49.95 + 1.50$

B $49.95x + 1.50$

C $(49.95 + 1.50)x$

_____

24 One leg of a right triangle is 18 units long. The hypotenuse of this triangle is 30 units long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$0.9 \times 10^{-3} =$ _____

26 A bag contains 100 balls, 60 of which are red. Gordon takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

27 Elsa goes to a dance class every 3 days and Tina goes to the same dance class every 8 days. If they are together at the class on Friday, what is the next day they will be together at the dance class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	40
5	60
10	80
15	100
20	120

Based on the above data, which of these is the most likely to be correct?

A The temperature after 30 minutes will be 120 °C.

B The temperature after 25 minutes will be 110 °C.

C The temperature after 30 minutes will be higher than the temperature after 25 minutes.

_____

Student: _____ Teacher: _____ Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 28 Answer Key

Item No.	Answer	Correct	Incorrect
1.	124.009, 124.09, 124.90	1	0
2.	C	1	0
3.	24	1	0
4.	16	1	0
5.	4140	1	0
6.	300	1	0
7.	1	1	0
8.	125	1	0
9.	$\dfrac{-9}{2}$, -4.2, $\dfrac{3}{7}$, 3.3, 4.5	2	0
10.	220, 330	1	0
11.	40	1	0
12.	C	1	0
13.	20	2	0
14.	63	2	0
15.	30	2	0
16.	12	1	0
17.	C	1	0
18.	416	1	0
19.	38	2	0
20.	1.232×10^5	2	0
21.	151	2	0
22.	3.6149×10^4	2	0
23.	B	2	0
24.	24	2	0
25.	0.0009	3	0
26.	60	2	0
27.	Monday	2	0
28.	C	1	0

Total [ ]

1 2 3 4 5 6 7 8 9 10 11 12 A B C D E

1 Order from least to greatest.

528.05, 528.50, 528.005

_____ < _____ < _____

2 The distance between two hotels on a map is 5.1 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the hotels?

A 510 km

B 51 km

C 5100 km

_____

3 Solve for the value of z.

$4z + 19 = 99$

_____

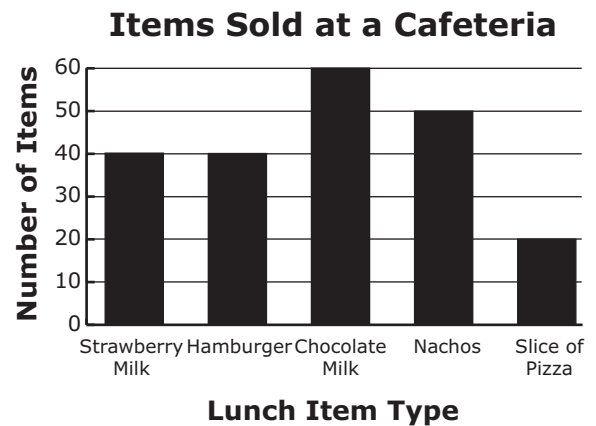**4** Fill in the missing number in this sequence.

1, 9, 17, _____, 33, 41

5

Car Sales	
Year	Cars
2003	61,002
2004	68,985
2005	77,873
2006	83,520

How many more cars were sold in 2006 than in 2003? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many hamburgers will be sold in 5 days? _____

7 Solve for the value of *x*.

$$\frac{26 - 1}{x} = 5$$

_____

8 Write the correct answer as an integer in the blank.

$3^3 + 7^2 =$ _____

9 Write these numbers in increasing order.

$0.5, \dfrac{-8}{7}, 9.9, \dfrac{9}{7}, -2.9$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a hall are 25 centimeters (cm) by 15 cm. The blueprint uses a scale of 1 cm = 10 meters (m). What are the actual dimensions of the hall?
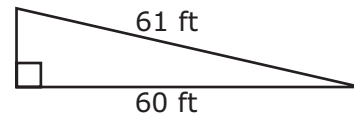
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$1^3 + 3^5 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 9.2111×10^8

B 921.11×10^5

C 92.111×10^6

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

61 ft
60 ft

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$2^3 + 2(5 + 7) - 2$

_____

15 Simplify the expression.

$9[17 - (2 + 17) + 1]$

_____

16 Solve for the value of x.

$$\frac{x + 18}{1} = 1$$

_____

17 A pond contains 33,000 gallons of water. The pond is drained at a rate of 13 gallons per minute. Which expression represents the amount of water in the pond after x minutes?

A $33{,}000x - 13$

B $33{,}000 + 13x$

C $33{,}000 - 13x$

_____

18 Simplify and write the answer as an integer in the blank.

$(5^3)3^2$
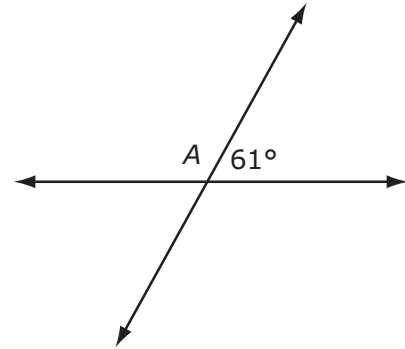
_____

19 What is the measure of $\angle A$?

_____ °

20 The diameter of a planet is 102,700 kilometers (km). What is the diameter of the planet in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °

22 Write this number in scientific notation.

$25{,}129 =$ _____
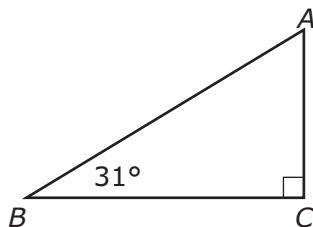
23 An online store sells laptops for $650.00 each. For each order, there is a one-time shipping and handling fee of $50.50. Which expression represents the cost of ordering x laptops?

A $x + 650.00 + 50.50$

B $650.00x + 50.50$

C $(650.00 + 50.50)x$

_____

24 One leg of a right triangle is 15 units long. The other leg of this triangle is 112 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$1.996 \times 10^{-4} =$ _____

26 A basket contains 30 bananas, 6 of which have bruises. Pierre takes a banana from the basket at random. What is the probability that he will take out a banana with bruises? Express the answer as a percent.

_____%

27 Eden goes to her sports club every 3 days and Diane goes to the same sports club every day. If they are together at the sports club on Saturday, what is the next day they will be together at the sports club?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	500
10	400
20	300
30	200
40	100

Based on the above data, which of these is the most likely to be correct?

A The temperature after 50 minutes will be 200 °C.

B The temperature after 60 minutes will be higher than the temperature after 50 minutes.

C The temperature after 70 minutes will be ⁻200 °C.

_____

Student: Teacher: Date:

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 29 Answer Key

Item No.	Answer	Correct	Incorrect
1.	528.005, 528.05, 528.50	1	0
2.	A	1	0
3.	20	1	0
4.	25	1	0
5.	22,518	1	0
6.	200	1	0
7.	5	1	0
8.	76	1	0
9.	$-2.9, \dfrac{-8}{7}, 0.5, \dfrac{9}{7}, 9.9$	2	0
10.	250, 150	1	0
11.	244	1	0
12.	A	1	0
13.	11	2	0
14.	30	2	0
15.	-9	2	0
16.	-17	1	0
17.	C	1	0
18.	1125	1	0
19.	59	2	0
20.	1.027×10^5	2	0
21.	119	2	0
22.	2.5129×10^4	2	0
23.	B	2	0
24.	113	2	0
25.	0.0001996	3	0
26.	20	2	0
27.	Tuesday	2	0
28.	C	1	0

Total ☐

1 Order from least to greatest.

555.05, 555.50, 555.005

_____ < _____ < _____

2 The distance between two cities on a map is 5.6 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 56 km

B 560 km

C 5600 km

_____

3 Solve for the value of *n*.

$9n + 11 = 83$

_____

4 Fill in the missing number in this sequence.

3, 7, 11, _____, 19, 23

5

Car Sales	
Year	Cars
1998	13,985
1999	15,525
2000	19,231
2001	23,971

How many more cars were sold in 2001 than in 1998? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria
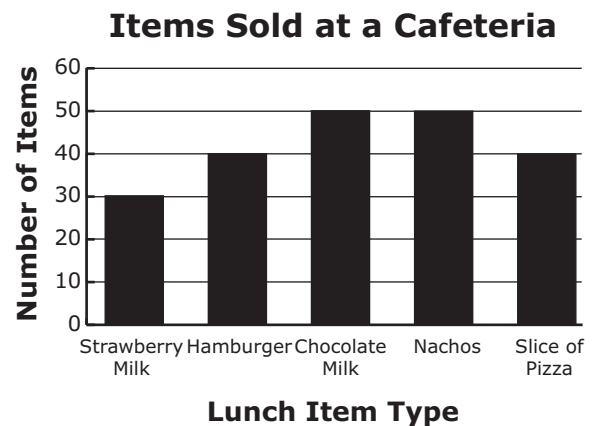
At this rate, how many slices of pizza will be sold in 5 days? _____

7 Solve for the value of *x*.

$$\frac{22 - 1}{x} = 7$$

_____

8 Write the correct answer as an integer in the blank.

$4^3 + 2^2 =$ _____

9 Write these numbers in increasing order.

$0.8, \frac{^-3}{5}, 7.8, \frac{9}{4}, ^-1.9$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a room are 30 centimeters (cm) by 10 cm. The blueprint uses a scale of 1 cm = 3 meters (m). What are the actual dimensions of the room?
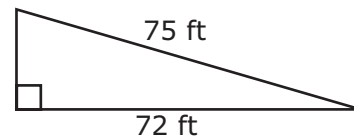
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$1^3 + 2^4 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 21.112×10^5

B 211.12×10^4

C 2.1112×10^6

_____

13 A ramp is constructed with the given dimensions. What is the height of the ramp?

75 ft

72 ft

Note: $c^2 = a^2 + b^2$

_____ ft

14 Simplify the expression.

$4^2 + 1(11 - 7) - 5$

_____

15 Simplify the expression.

$1[22 - (3 - 1) + 6]$

_____

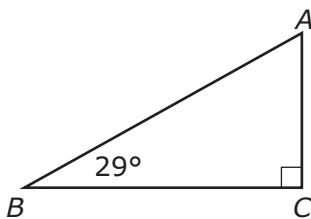**16**   Solve for the value of x.

$$\frac{x + 14}{1} = 1$$

_____

17   A pond contains 37,000 gallons of water. The pond is drained at a rate of 105 gallons per minute. Which expression represents the amount of water in the pond after x minutes?

A $37,000 - 105x$

B $37,000 + 105x$

C $37,000x - 105$

_____

18   Simplify and write the answer as an integer in the blank.

$(2^3)5^2$

_____

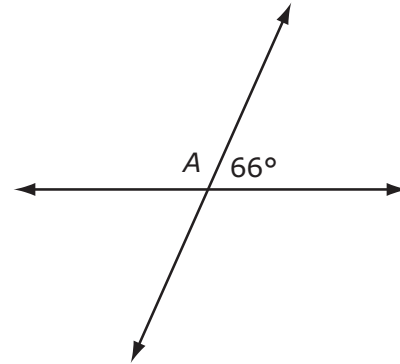**19**   What is the measure of $\angle A$?

_____ °

20   The diameter of a planet is 200,500 kilometers (km). What is the diameter of the planet in scientific notation?

_____ km

21   What is the measure of $\angle A$?

_____ °

22   Write this number in scientific notation.

$39,839 =$ _____

23   An online store sells laptops for $700.00 each. For each order, there is a one-time shipping and handling fee of $100.00. Which expression represents the cost of ordering x laptops?

A $x + 700.00 + 100.00$

B $(700.00 + 100.00)x$

C $700.00x + 100.00$

_____

24 One leg of a right triangle is 84 units long. The other leg of this triangle is 13 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$7.7 \times 10^{-3} =$ _____

26 A basket contains 25 bananas, 10 of which have bruises. Pete takes a banana from the basket at random. What is the probability that he will take out a banana without bruises? Express the answer as a percent.

_____%

27 Bianca goes to a cooking class every 9 days and Kathy goes to the same cooking class every 3 days. If they are together at the cooking class on Monday, what is the next day they will be together at the cooking class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	1000
10	800
20	600
30	400
40	200

Based on the above data, which of these is the most likely to be correct?

A The temperature after 50 minutes will be 300 °C.

B The temperature after 60 minutes will be ⁻200 °C.

C The temperature after 70 minutes will be higher than the temperature after 50 minutes.

_____

Student:　　　　　　　　　　Teacher:　　　　　　　　　　Date:
_____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 30 Answer Key

Item No.	Answer	Correct	Incorrect
1.	555.005, 555.05, 555.50	1	0
2.	B	1	0
3.	8	1	0
4.	15	1	0
5.	9986	1	0
6.	200	1	0
7.	3	1	0
8.	68	1	0
9.	$-1.9, \dfrac{-3}{5}, 0.8, \dfrac{9}{4}, 7.8$	2	0
10.	90, 30	1	0
11.	17	1	0
12.	C	1	0
13.	21	2	0
14.	15	2	0
15.	26	2	0
16.	-13	1	0
17.	A	1	0
18.	200	1	0
19.	61	2	0
20.	2.005×10^5	2	0
21.	114	2	0
22.	3.9839×10^4	2	0
23.	C	2	0
24.	85	2	0
25.	0.0077	3	0
26.	60	2	0
27.	Wednesday	2	0
28.	B	1	0

Total ☐

1 Order from least to greatest.

717.09, 717.90, 717.009

_____ < _____ < _____

2 The distance between two cities on a map is 8.8 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 88 km

B 880 km

C 8800 km

_____

3 Solve for the value of n.

$2n + 60 = 60$

_____

4 Fill in the missing number in this sequence.

3, 13, 23, _____, 43, 53

5

Television Sales	
Year	Televisions
1998	16,285
1999	18,425
2000	22,331
2001	26,071

How many more televisions were sold in 2001 than in 2000? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many cartons of chocolate milk will be sold in 5 days? _____

Student: _____ Teacher: _____ Date: _____
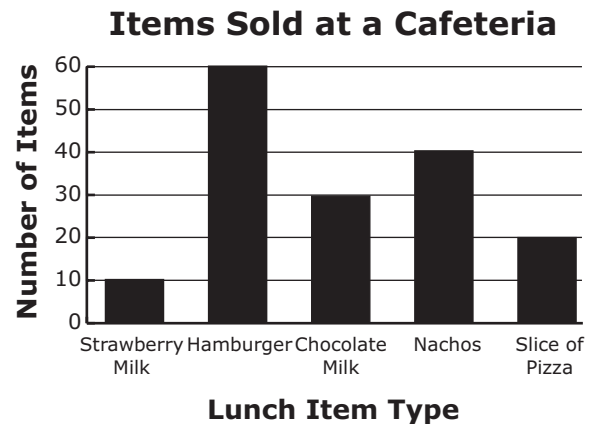
7 Solve for the value of *x*.

$$\frac{3 + 9}{x} = 12$$

_____

8 Write the correct answer as an integer in the blank.

$7^2 + 9^2 =$ _____

9 Write these numbers in increasing order.

$0.8, \frac{-5}{3}, 3.2, \frac{5}{6}, -1.8$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a park are 25 centimeters (cm) by 35 cm. The blueprint uses a scale of 1 cm = 10 meters (m). What are the actual dimensions of the park?
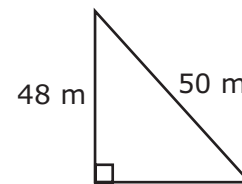
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$3^3 + 2^4 =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 84.429×10^5

B 8.4429×10^6

C 844.29×10^4

_____

13 A ramp is constructed with the given dimensions. What is the width of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$2^3 + 4(2 - 1) - 6$

_____

15 Simplify the expression.

$2[2^4 - (4 - 1)2]$

_____

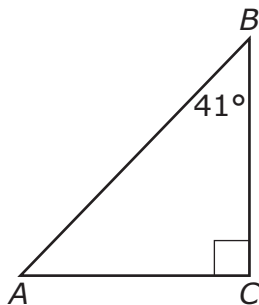**16** Solve for the value of *x*.

$$\frac{x + 1}{3} = 10$$

_____

17 A swimming pool contains 19,000 gallons of water. The pool is drained at a rate of 11 gallons per minute. Which expression represents the amount of water in the pool after *x* minutes?

A $19,000x - 11$

B $19,000 + 11x$

C $19,000 - 11x$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^5)8^1$
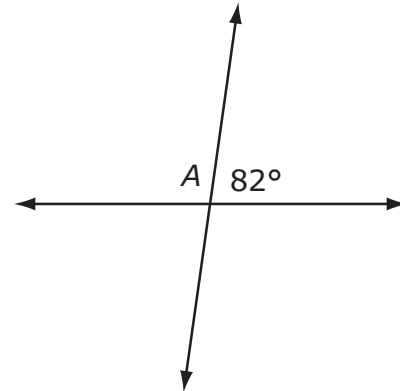
_____

19 What is the measure of $\angle A$?

_____°

20 The diameter of an asteroid is 114,700 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____°

22 Write this number in scientific notation.

$24,239 = $ _____

23 An online store sells bags for $9.50 each. For each order, there is a one-time shipping and handling fee of $1.55. Which expression represents the cost of ordering *x* bags?

A $(9.50 + 1.55)x$

B $9.50x + 1.55$

C $x + 9.50 + 1.55$

_____

24 One leg of a right triangle is 6 inches (in.) long. The hypotenuse of this triangle is 10 in. long. What is the length of the other leg?

Note: $c^2 = a^2 + b^2$

_____ in.

---

25 Write the number as a decimal in standard form.

$3.7 \times 10^{-3} =$ _____

---

26 A bag contains 50 balls, 10 of which are red. Luke takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

_____ %

---

27 Layla goes to a dance class every 4 days and Sienna goes to the same dance class every 5 days. If they are together at the class on Wednesday, what is the next day they will be together at the dance class?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	70
5	60
10	50
15	40
20	30

Based on the above data, which of these is the most likely to be correct?

A The temperature after 30 minutes will be 50 °C.

B The temperature after 40 minutes will be ‾60 °C.

C The temperature after 40 minutes will be lower than the temperature after 30 minutes.

_____

Student: Teacher: Date:

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 31 Answer Key

Item No.	Answer	Correct	Incorrect
1.	717.009, 717.09, 717.90	1	0
2.	B	1	0
3.	0	1	0
4.	33	1	0
5.	3740	1	0
6.	150	1	0
7.	1	1	0
8.	130	1	0
9.	$-1.8, \dfrac{-5}{3}, 0.8, \dfrac{5}{6}, 3.2$	2	0
10.	250, 350	1	0
11.	43	1	0
12.	B	1	0
13.	14	2	0
14.	6	2	0
15.	20	2	0
16.	29	1	0
17.	C	1	0
18.	256	1	0
19.	49	2	0
20.	1.147×10^5	2	0
21.	98	2	0
22.	2.4239×10^4	2	0
23.	B	2	0
24.	8	2	0
25.	0.0037	3	0
26.	20	2	0
27.	Tuesday	2	0
28.	C	1	0

Total [ ]

1 Order from least to greatest.

387.06, 387.60, 387.006

_____ < _____ < _____

2 The distance between two cities on a map is 2.9 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 2900 km

B 29 km

C 290 km

_____

3 Solve for the value of *n*.

$2n + 60 = 110$

_____

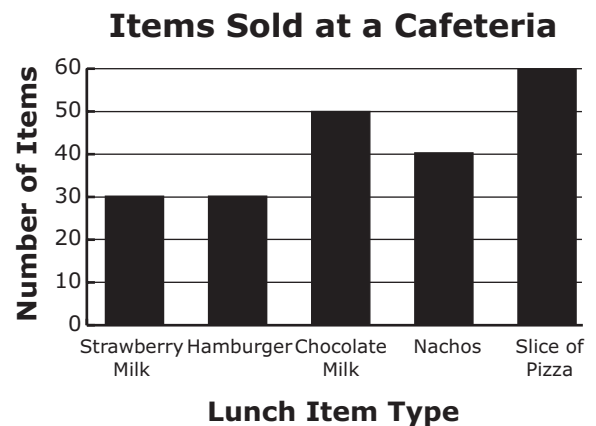**4** Fill in the missing number in this sequence.

2, 13, 24, _____, 46, 57

5

Television Sales	
Year	Televisions
1998	15,185
1999	17,525
2000	21,231
2001	25,971

How many more televisions were sold in 1999 than in 1998? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many slices of pizza will be sold in 6 days? _____

7   Solve for the value of x.

$$\frac{1+9}{x} = 10$$

_____

8   Write the correct answer as an integer in the blank.

$3^2 + 2^7 =$ _____

9   Write these numbers in increasing order.

$0.6, \dfrac{-1}{3}, 2.7, \dfrac{3}{8}, -1.6$

_____ _____ _____ _____ _____

10   On a blueprint, the dimensions of a park are 23 centimeters (cm) by 15 cm. The blueprint uses a scale of 1 cm = 8 meters (m). What are the actual dimensions of the park?
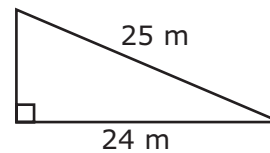
_____ m by _____ m

11   Write the correct answer as an integer in the blank.

$3^2 + 1^{100} =$ _____

12   Which of these numbers is expressed properly in scientific notation?

A 72.427×10^5

B 7.2427×10^6

C 724.27×10^4

_____

13   A ramp is constructed with the given dimensions. What is the height of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14   Simplify the expression.

$1^3 + 9(2 - 2) - 6$

_____

15   Simplify the expression.

$2[1^4 - (9 - 9)10]$

_____

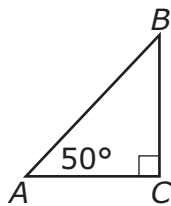**16** Solve for the value of *x*.

$$\frac{x + 1}{9} = 11$$

_____

17 A swimming pool contains 10,950 gallons of water. The pool is drained at a rate of 15 gallons per minute. Which expression represents the amount of water in the pool after *x* minutes?

A $10{,}950 - 15x$

B $10{,}950 + 15x$

C $10{,}950x - 15$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^6)1^{100}$

_____

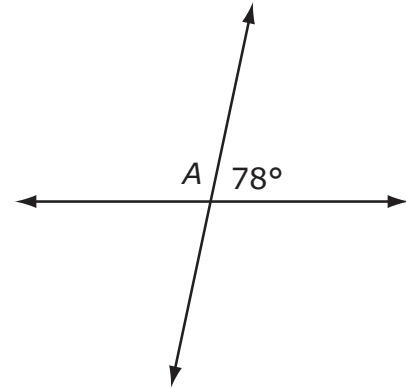**19** What is the measure of $\angle B$?

_____ °

20 The diameter of an asteroid is 194,300 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____ °

22 Write this number in scientific notation.

$11{,}138 =$ _____

23 An online store sells bags for $39.00 each. For each order, there is a one-time shipping and handling fee of $3.50. Which expression represents the cost of ordering *x* bags?

A $39.00x + 3.50$

B $(39.00 + 3.50)x$

C $x + 39.00 + 3.50$

_____

24 One leg of a right triangle is 84 units long. The other leg of this triangle is 13 units long. What is the length of the hypotenuse of this triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$9.4 \times 10^{-3} =$ _____

26 A bag contains 20 balls, 6 of which are orange. Alex takes a ball from the bag at random. What is the probability that he will take out an orange ball? Express the answer as a percent.

_____ %

27 Joan goes to the grocery store every 3 days and Bretta goes to the same grocery store every 9 days. If they are together at the store on Thursday, what is the next day they will be together at the grocery store?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	130
5	110
10	90
15	70
20	50

Based on the above data, which of these is the most likely to be correct?

A The temperature after 30 minutes will be higher than the temperature after 25 minutes.

B The temperature after 25 minutes will be 30 °C.

C The temperature after 30 minutes will be 40 °C.

_____

Student: _____   Teacher: _____   Date: _____

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 32 Answer Key

Item No.	Answer	Correct	Incorrect
1.	387.006, 387.06, 387.60	1	0
2.	C	1	0
3.	25	1	0
4.	35	1	0
5.	2340	1	0
6.	360	1	0
7.	1	1	0
8.	137	1	0
9.	$-1.6, \dfrac{-1}{3}, \dfrac{3}{8}, 0.6, 2.7$	2	0
10.	184, 120	1	0
11.	10	1	0
12.	B	1	0
13.	7	2	0
14.	-5	2	0
15.	2	2	0
16.	98	1	0
17.	A	1	0
18.	64	1	0
19.	40	2	0
20.	1.943×10^5	2	0
21.	102	2	0
22.	1.1138×10^4	2	0
23.	A	2	0
24.	85	2	0
25.	0.0094	3	0
26.	30	2	0
27.	Saturday	2	0
28.	B	1	0

Total ☐

1 Order from least to greatest.

317.01, 317.10, 317.001

_____ < _____ < _____

2 The distance between two cities on a map is 2.3 centimeters (cm). The map uses a scale of 1 cm = 100 kilometers (km). How far apart are the cities?

A 23 km

B 230 km

C 2300 km

_____

3 Solve for the value of *n*.

$2n + 60 = 120$

_____

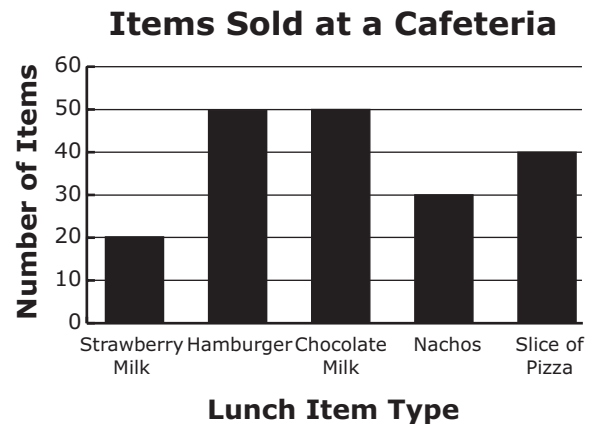**4** Fill in the missing number in this sequence.

2, 14, 26, _____, 50, 62

5

Television Sales	
Year	Televisions
1998	15,285
1999	17,425
2000	21,331
2001	25,071

How many more televisions were sold in 1999 than in 1998? _____

6 The graph shows the number of lunch items sold at a school cafeteria in one day.

Items Sold at a Cafeteria

At this rate, how many hamburgers will be sold in 3 days? _____

7 Solve for the value of *x*.

$$\frac{2+9}{x} = 11$$

_____

8 Write the correct answer as an integer in the blank.

$2^3 + 7^2 =$ _____

9 Write these numbers in increasing order.

$0.7, \dfrac{-5}{4}, 2.8, \dfrac{5}{7}, -1.7$

_____ _____ _____ _____ _____

10 On a blueprint, the dimensions of a park are 21 centimeters (cm) by 21 cm. The blueprint uses a scale of 1 cm = 20 meters (m). What are the actual dimensions of the park?
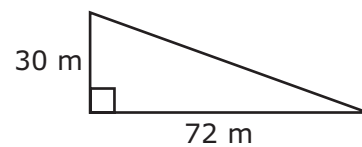
_____ m by _____ m

11 Write the correct answer as an integer in the blank.

$3^4 + 2^{10} =$ _____

12 Which of these numbers is expressed properly in scientific notation?

A 49.922×10^5

B 499.22×10^4

C 4.9922×10^6

_____

13 A ramp is constructed with the given dimensions. What is the length of the ramp?

Note: $c^2 = a^2 + b^2$

_____ m

14 Simplify the expression.

$1^3 + 4(3 - 2) - 6$

_____

15 Simplify the expression.

$2[1^4 - (7 - 1)1]$

_____

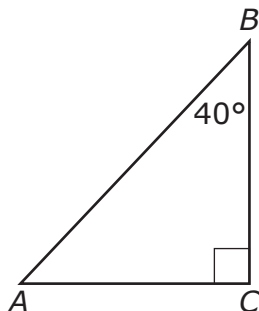**16** Solve for the value of x.

$$\frac{x + 1}{3} = 11$$

_____

17 A swimming pool contains 15,200 gallons of water. The pool is drained at a rate of 14 gallons per minute. Which expression represents the amount of water in the pool after x minutes?

A $15,200x - 14$

B $15,200 + 14x$

C $15,200 - 14x$

_____

18 Simplify and write the answer as an integer in the blank.

$(2^5)3^1$
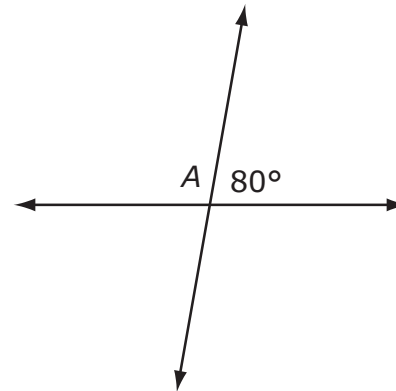
_____

19 What is the measure of $\angle A$?

_____°

20 The diameter of an asteroid is 124,400 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

21 What is the measure of $\angle A$?

_____°

22 Write this number in scientific notation.

$11,339 = $ _____

23 An online store sells wallets for $19.00 each. For each order, there is a one-time shipping and handling fee of $2.50. Which expression represents the cost of ordering x wallets?

A $(19.00 + 2.50)x$

B $19.00x + 2.50$

C $x + 19.00 + 2.50$

_____

24 One leg of a right triangle is 24 units long. The hypotenuse of the triangle is 25 units long. What is the length of the other leg of the triangle?

Note: $c^2 = a^2 + b^2$

_____ units

25 Write the number as a decimal in standard form.

$1.2 \times 10^{-3} =$ _____

26 A bag contains 25 balls, 6 of which are pink. Ross takes a ball from the bag at random. What is the probability that he will take out a pink ball? Express the answer as a percent.

_____ %

27 Jessica goes to the post office every 3 days and Maria goes to the same post office every day. If they are together at the post office on Wednesday, what is the next day they will be together at the post office?

_____

28

Temperatures of a Liquid	
Time (minutes)	Temperature (°C)
0	150
5	130
10	110
15	90
20	70

Based on the above data, which of these is the most likely to be correct?

A The temperature after 30 minutes will be 60 °C.

B The temperature after 30 minutes will be higher than the temperature after 25 minutes.

C The temperature after 25 minutes will be 50 °C.

_____

Student: Teacher: Date:

Reminder: There is **no** partial credit when scoring. The answer must be correct **in its entirety** to obtain the correct score value. If any part of a multi-part question is incorrect, the score is zero.

Grade 8, Probe 33 Answer Key

Item No.	Answer	Correct	Incorrect
1.	317.001, 317.01, 317.10	1	0
2.	B	1	0
3.	30	1	0
4.	38	1	0
5.	2140	1	0
6.	150	1	0
7.	1	1	0
8.	57	1	0
9.	$-1.7, \dfrac{-5}{4}, 0.7, \dfrac{5}{7}, 2.8$	2	0
10.	420, 420	1	0
11.	1105	1	0
12.	C	1	0
13.	78	2	0
14.	$^{-}1$	2	0
15.	$^{-}10$	2	0
16.	32	1	0
17.	C	1	0
18.	96	1	0
19.	50	2	0
20.	1.244×10^5	2	0
21.	100	2	0
22.	1.1339×10^4	2	0
23.	B	2	0
24.	7	2	0
25.	0.0012	3	0
26.	24	2	0
27.	Saturday	2	0
28.	C	1	0

Total ☐