Part 1

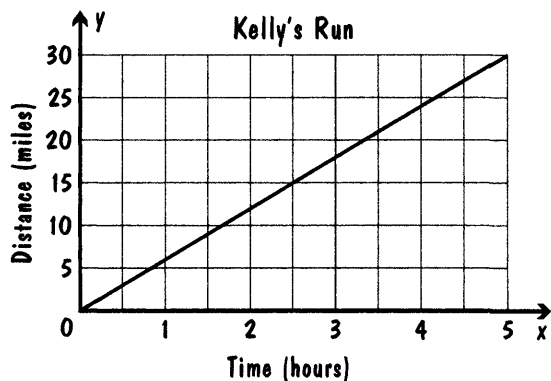**Read each question. Select the correct answer.**

1 Jacob deposited $50.24 into his bank account after making an $18.00 withdrawal to purchase books. Represent these situations as signed numbers.

A. 50.24, 18.00

B. −50.24, −18.00

C. 50.24, −18.00

D. −50.24, 18.00

2 The graph shows the proportional relationship between the time and distance Kelly ran. The proportional relationship between the time and distance Julia ran is modeled by the equation $y = 5.5x$, where y is the distance in miles, and x is the time in hours. Which of the following statements is true?

A. Kelly ran faster; her unit rate is greater than Julia's.

B. Julia ran faster; her unit rate is greater than Kelly's.

C. Kelly ran faster; her unit rate is less than Julia's.

D. Julia ran faster; her unit rate is less than Kelly's.

3 Paula spent $84.29 at the store, Candice spent $94.56, Dan spent $83.79, and Eric spent $95.06. Who spent the most money? Who spent the least money?

A. Dan spent the most money, and Eric spent the least money.

B. Candice spent the most money, and Paula spent the least money.

C. Eric spent the most money, and Dan spent the least money.

D. Paula spent the most money, and Candice spent the least money.

4 Which pair of number values for c and d have the following properties?
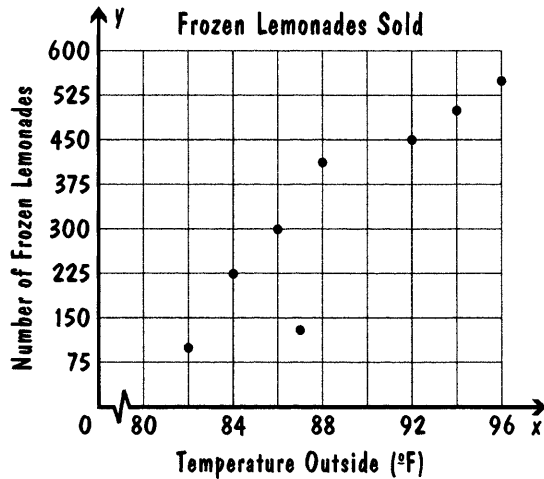
$$c < d; \qquad |c| = |d|$$

A. $c = -4$ and $d = 4$

B. $c = 8$ and $d = 8$

C. $c = -6$ and $d = -6$

D. $c = 7$ and $d = -7$

5 Convert $\frac{5}{8}$ to a decimal number. Enter your response in the gridded area on the answer sheet.

6 Which set of points represents a linear function?

A. $(-5, -1)$, $(0, 5)$, and $(5, 10)$

B. $(-3, -1)$, $(-1, 1)$, and $(1, 3)$

C. $(0, 1)$, $(4, 5)$, and $(5, 4)$

D. $(2, -1)$, $(5, 1)$, and $(7, 3)$

7 The scatter plot shows the relationship between the outside temperature and the number of frozen lemonades sold.

Frozen Lemonades Sold

Which **best** describes the outlier of this scatter plot?

A. When the temperature is 96°F, the number of frozen lemonades sold is 540.

B. When the temperature is 92°F, the number of frozen lemonades sold is 450.

C. When the temperature is 87°F, the number of frozen lemonades sold is 130.

D. When the temperature is 82°F, the number of frozen lemonades sold is 100.

8 Which situation results in a total of 0?

A. A scuba diver starts at 0 feet, travels −129 feet, and then travels 129 feet.

B. Harlan deposits $87.54 in her checking account, and then writes a check for $78.54.

C. The temperature is −2°C, and then increases 3°C.

D. A player loses 60 points on his turn, then gains 75 points on his next turn.

9 Stacy goes for a walk. She walks $\frac{8}{5}$ miles to her friend's house. Then she walks back $\frac{4}{7}$ mile back to the park. Which expression could be used to find how far away from home Stacy is?

A. $-\frac{8}{5} + \left(-\frac{4}{7}\right)$

B. $\frac{8}{5} + \frac{4}{7}$

C. $\frac{8}{5} + \left(-\frac{4}{7}\right)$

D. $-\frac{8}{5} + \frac{4}{7}$

10 Which are equivalent expressions? Select the two that apply.

A. $-\frac{2}{7} + \left(-\frac{6}{7}\right)$

B. $-\frac{2}{7} + \left(\frac{6}{7}\right)$

C. $\frac{2}{7} + \left(-\frac{6}{7}\right)$

D. $\frac{2}{7} + \frac{6}{7}$

E. $\frac{7}{7} - \frac{2}{7}$

F. $\frac{2}{7} - \frac{6}{7}$

11 A stock lost $1.50 in value each day for 5 consecutive days. Which is a correct interpretation of the product −$1.50 × 5?

A. The stock lost $1.50 per day.

B. The stock lost $6.50 over 5 days.

C. The stock lost $7.50 over 5 days.

D. The stock lost $7.50 per day.

12 The local animal shelter uses 2 bags of cat litter every day. How long will $\frac{2}{3}$ of a bag of cat litter last?

A. 12 days

B. 4 days

C. $2\frac{1}{3}$ days

D. $\frac{1}{3}$ day

13 Solve the system of equations.

$x + 2y = 10$

$3x + 5y = 26$
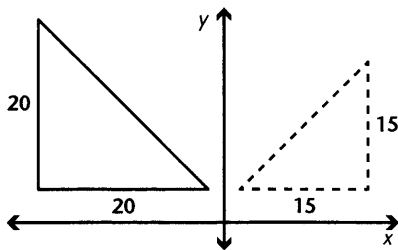
A. $(4, 3)$

B. $(7, 1)$

C. $(6, 2)$

D. $(2, 4)$

14 Charlie is renting a sailboat. The rental company charges $60 for each rental, plus $12 per hour. Charlie has $108. Which inequality shows the number of hours, h, he can rent the sailboat?

A. $h \geq 5$

B. $h \leq 5$

C. $h \geq 4$

D. $h \leq 4$

15 Simplify $\left(\dfrac{x^2}{y^{-3}}\right)^5$.

A. $x^{10}\,y^{15}$

B. $\dfrac{x^{10}}{y^{15}}$

C. $\dfrac{y^{15}}{x^{10}}$

D. $\dfrac{1}{x^{10}\,y^{15}}$

16 From the given image on the left, what sequence of transformations can produce the dashed image? Select the two that apply.
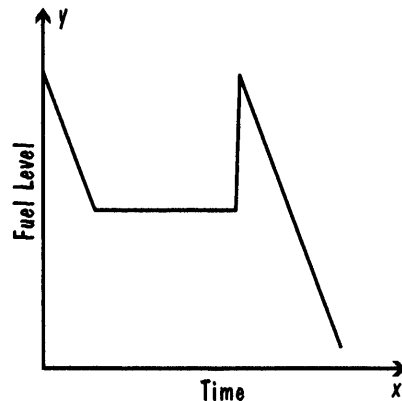

A. A horizontal reflection and a dilation of scale factor 5.

B. A horizontal reflection and a dilation of scale factor $\frac{3}{4}$.

C. A 90° rotation counterclockwise about the origin, a translation on a diagonal and a dilation of scale factor 5.

D. A 90° rotation counterclockwise about the origin, a translation on a diagonal and a dilation of scale factor $\frac{3}{4}$.

17 A scatter plot shows a linear association between absences from class (x) and overall grade (y). The equation is $y = -3.4x + 96$. Which <u>best</u> describes the meaning of the y-intercept and slope?

A. The grade is 96 when there are no absences and increases by 3.4 points with each absence.

B. The grade is 96 when there are no absences and decreases by 3.4 points with each absence.

C. The grade is 3.4 when there are no absences and decreases by 96 points with each absence.

D. The grade is 3.4 when there are no absences and increases by 96 points with each absence.

18 The graph shows the fuel level in Roger's car during the first day of his road trip. Which statement could describe Roger's day?

A. Roger filled the tank, drove awhile, filled the tank, and drove some more.

B. Roger drove awhile, stopped for a while, filled the tank, and drove some more.

C. Roger drove awhile, filled the tank, drove some more, and filled the tank.

D. Roger filled the tank, drove awhile, stopped for a while, and drove some more.

19 A tuxedo rental company charges $75.40 per day to rent a tuxedo. Which equation shows the relationship between the cost c in dollars and the rental period d in days?

A. $c = d - 75.40$

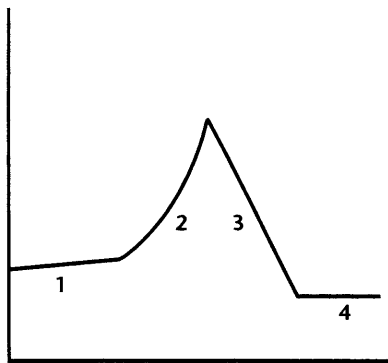B. $c = 75.40d$

C. $c = 75.40 + d$

D. $c = d \div 75.40$

20 On the weekend, Jane bikes to her friend's house and then they bike to the mall together. The table shows the distance from Jane's home as Jane and her friend bike together.

Time (minutes)	12	24	36	48	60
Distance from Home (mi)	9.4	11.8	14.2	16.6	19

How far is Jane's friend from her house?

A. 0.74 mile

B. 1.2 miles

C. 2.4 miles

D. 7 miles

21 Which segment of the graph is nonlinear and increasing?

A. Segment 1   B. Segment 2

C. Segment 3   D. Segment 4

22 Which real-world situation has a theoretical probability of 0.5?

A. seeing the end of the movie before leaving the theater

B. choosing a flavor of frozen yogurt from 14 flavors

C. temperatures reaching 100° F in the desert in the summer

D. deciding whether or not to mow the yard

23 Paul throws a standard die two times. What is the probability he gets a 3 on both throws?

A. $\frac{2}{13}$

B. $\frac{1}{36}$

C. $\frac{4}{169}$

D. $\frac{1}{1352}$

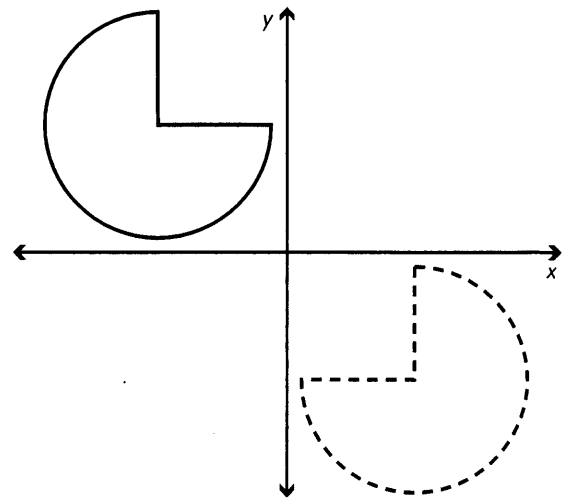**24** When you roll a die, which is a true statement about the probability of rolling a 6 compared to the probability of rolling a 1?

A. $P(6) < P(1)$

B. $P(6) > P(1)$

C. Both probabilities equal 0.

D. $P(6) = P(1)$

25 Two angles are complementary. One of the angles has a measure of 36°. What is the measure of the second angle?

A. 36°   B. 54°

C. 126°   D. 144°

26 Which sequence of transformations will transform the figure on the left to the image on the right?

A. horizontal reflection and translation

B. translation and rotation of 90° clockwise about the origin

C. vertical reflection and rotation of 90° counterclockwise about the origin

D. horizontal reflection and rotation of 180° counterclockwise about the origin

Part 2

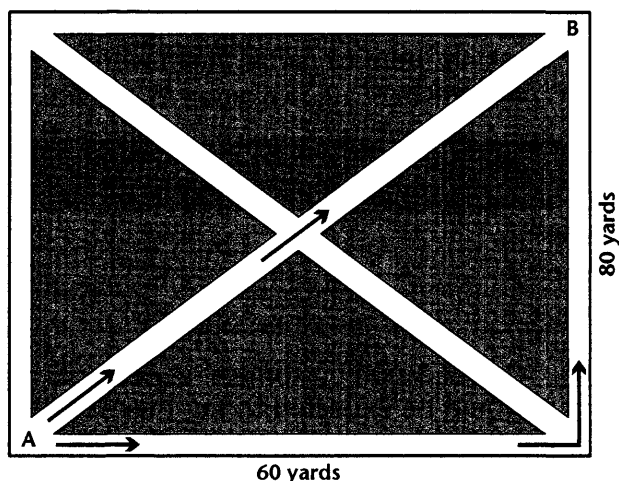**Read each question. Select the correct answer. You may use a calculator on Part 2.**

27 The table shows the number of people on a company's payroll for each of the last 9 months.

Month	1	2	3	4	5	6	7	8	9
Number of people	475	520	495	485	510	480	520	500	490

Which value <u>best</u> represents the data? Explain.

A. The mean of 497.2 because there are no outliers.

B. The median of 495 because half the numbers are above and half are below this number.

C. The mode of 520 because this is the greatest number of people on the payroll.

D. The mean, median, and mode all represent the data accurately.

28 The figure shows paths going around and through a park. Suppose you will walk from location A to location B by one of the indicated routes. What is the difference in length between the two routes?

A. 20 yards

B. 40 yards

C. 100 yards

D. 140 yards

29 On a coordinate grid, what is the distance between the points $(-9, 7)$ and $(6, -1)$? Round to the nearest whole number, if necessary.

A. 4

B. 5

C. 13

D. 17

30 The two-way table shows the results of a survey of females and their preference of a book or a movie. Which is a true statement?

Females	Movie	Book
18–45	24	66
46+	44	46

A. The movie watchers are the largest group.

B. The 18–45 females are the largest group.

C. The movie watchers are the smallest group.

D. The 46+ females are the smallest group.

31 Soothing Smoothies sells fruit smoothies for $6 each, plus a $10 delivery fee. An office pays a total of $100 for a delivery of fruit smoothies. Use an equation to find how many fruit smoothies they ordered.

A. 12 smoothies

B. 13 smoothies

C. 14 smoothies

D. 15 smoothies

32 One cell has a diameter of 6×10^{-9} meter. Another cell has a diameter of 1.5×10^{-10} meter. Approximately how many times larger is the first cell than the second cell?

A. 35   B. 40

C. 45   D. 50

33 At camp, Maya uses 512 cubic centimeters of clay to make a cube. What is the side length of the cube?

A. −64 centimeters

B. −8 centimeters

C. 8 centimeters

D. 64 centimeters

34 Which is the better buy?

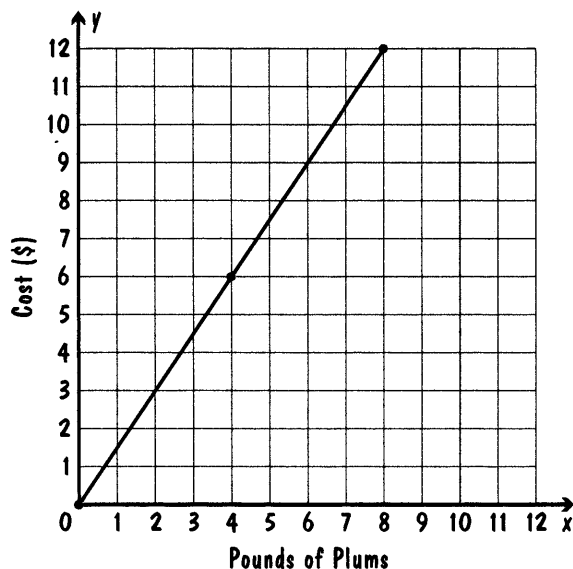10-pound bag of soil for $13.60 per bag
25-pound bag of soil for $33.50 per bag

A. The 10-pound bag which has a unit rate of $1.34 per pound

B. The 10-pound bag which has a unit rate of $1.36 per pound

C. The 25-pound bag which has a unit rate of $1.34 per pound

D. The 25-pound bag which has a unit rate of $1.36 per pound

35 What valid conclusion can you draw from the data in this table?

Hours x	12	15	22
Dollars Earned y	137.40	177.00	266.20

A. The relationship is not proportional because the ratio of dollars earned to hours is 11.45.

B. The relationship is proportional because the ratio of dollars earned to hours is 11.80.

C. The relationship is proportional because the ratio of dollars earned to hours is 12.10.

D. The relationship is not proportional because the ratio of dollars earned to hours is not constant.

36 Tell whether the relationship is a proportional relationship. If so, give the constant of proportionality.

Pounds of Plums

A. The relationship is proportional with a constant of proportionality of 1.25.

B. The relationship is proportional with a constant of proportionality of 1.5.

C. The relationship is proportional with a constant of proportionality of 1.75.

D. The relationship is not proportional.

37 A concession stand owner sells four kinds of sandwiches: Turkey, Beef, Ham, and Veggie. The owner conducted three random-sample surveys of 100 customers, asking them to name their favorite sandwich.

Favorite Sandwich	Turkey	Beef	Ham	Veggie
Sample 1	32	23	33	12
Sample 2	34	21	32	13
Sample 3	35	20	30	15

Out of 1,000 customers, about how many would be expected to say their favorite sandwich from the stand is turkey?

A. 33

B. 34

C. 335

D. 337

38 The heights of two groups of tomato plants were measured in inches. The mean height of group A is 28 inches and the MAD is 7.2. The mean height for group B is 36 inches and the MAD is 5.3. Which of the following is an accurate comparison of the populations?

A. The typical height is greater for group B, and the variation is greater for group A.

B. The typical height is greater for group B, and the variation is greater for group B.

C. The typical height is greater for group A, and the variation is the same for both groups.

D. The typical height and the variation are similar for both groups.

39 What is the area of a circle that has a diameter of 9 centimeters? Use 3.14 for π.

A. 14.13 square centimeters

B. 28.26 square centimeters

C. 63.59 square centimeters

D. 254.34 square centimeters

40 A metal trunk is the shape of a rectangular prism. Its length is 4.5 feet, its width is 2.25 feet, and its height is 1.75 feet. What is the volume of the trunk bed, rounded to the nearest tenth?

A. 8.5 cubic feet

B. 11.9 cubic feet

C. 17.7 cubic feet

D. 21.9 cubic feet