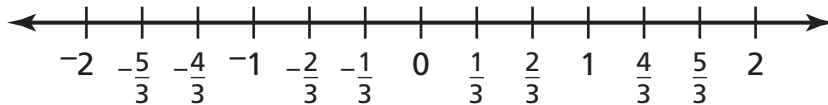## Section 1 (Calculator-Inactive)

Answer questions 1–20. Answer questions outlined in orange in your test book. Answer all other questions on the Answer Form. You may not use a calculator.

1 Refer to the number line below.

Which statements are *true*? Mark all that apply.

A Since $^-2$ is to the left of 1, $^-2 < 1$.

B Since $^-1$ is to the left of 1, $^-1 = 1$.

C Since $^-2$ is to the left of $\frac{1}{3}$, $^-2 > \frac{1}{3}$.

D Since $^-2$ is to the left of $^-1$, $^-1 < {}^-2$.

E Since $^-1$ is to the left of $-\frac{2}{3}$, $^-1 < -\frac{2}{3}$.

F Since $^-1$ is to the left of 2, $2 > {}^-1$.

Go On

2 This table shows the daily changes in the price of a stock. The value 0 represents no change from the price on the previous day.

Day	Price Change (in dollars)
Monday	+0.78
Tuesday	+0.44
Wednesday	−1.27
Thursday	+0.35

On which days did the price of the stock increase? Mark all that apply.

A   Monday

B   Tuesday

C   Wednesday

D   Thursday

3 On a number line, point A is located at the opposite of −7. Which numbers are located on the opposite side of 0 from point A? Mark all that apply.

A   0

B   −3

C   3

D   7

E   −5

F   −2

4 The student council set a goal of raising at least $500 in flower sales. So far it has raised $415.

Part A

Write an inequality to show how many more dollars, d, the student council needs to raise to reach its goal.

Inequality _____

Part B

Graph the inequality from Part A on the number line.

Part C

How many solutions does the inequality have? Explain your reasoning by giving some examples of solutions to the inequality.
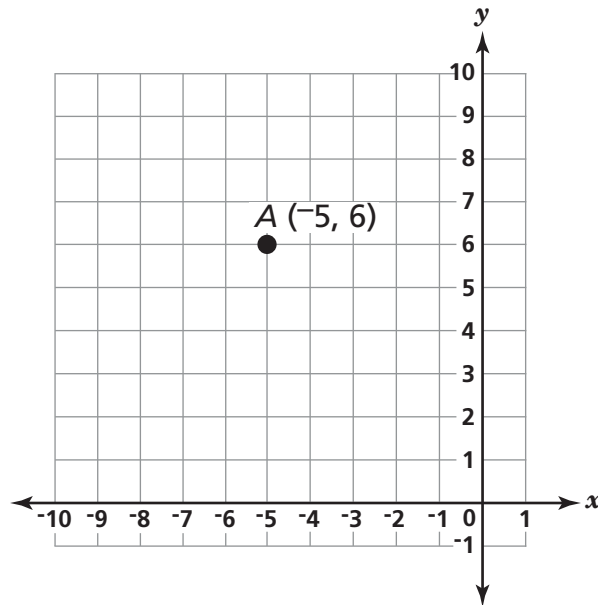
_____

_____

_____

_____

Go On

5 Write the algebraic expression that best matches each verbal expression. Not all expressions have a match.

$$7 - n^2 \qquad \frac{6}{n} - 7 \qquad \frac{7n}{6} \qquad (7 - n)^2 \qquad 6n + 7 \qquad 6(n + 7)$$

"Seven less than the ratio of 6 and a number."	**"Six times the sum of a number and 7."**	**"The difference of 7 and a number, squared."**

6 Use the grid below.

Part A

Which ordered pair represents point *A* reflected across the *y*-axis?

A $(^-6, {}^-5)$

B $(^-5, {}^-6)$

C $(5, 6)$

D $(6, 5)$

Part B

Which ordered pair represents point *A* reflected across the *x*-axis?

A $(^-6, {}^-5)$

**B** $(^-5, {}^-6)$

C $(5, 6)$

D $(6, 5)$

Go On

7 The combination to a safe has 4 numbers. The first number is the greatest common factor of 16 and 40. The second number is the greatest common factor of 25 and 75. The third number is the greatest common factor of 27 and 36. The fourth number is the greatest common factor of 44 and 98. Which statements are true? Mark all that apply.

A The first number is 8.

B The second number is 25.

C The third number is 18.

D The fourth number is 2.

8 Central Park is shaped like a rectangle. Two diagonally-opposite corners of the park are located at (⁻9, 7) and (4, ⁻3) on the coordinate plane.

Part A

Plot points on this coordinate plane to represent all 4 corners of Central Park.
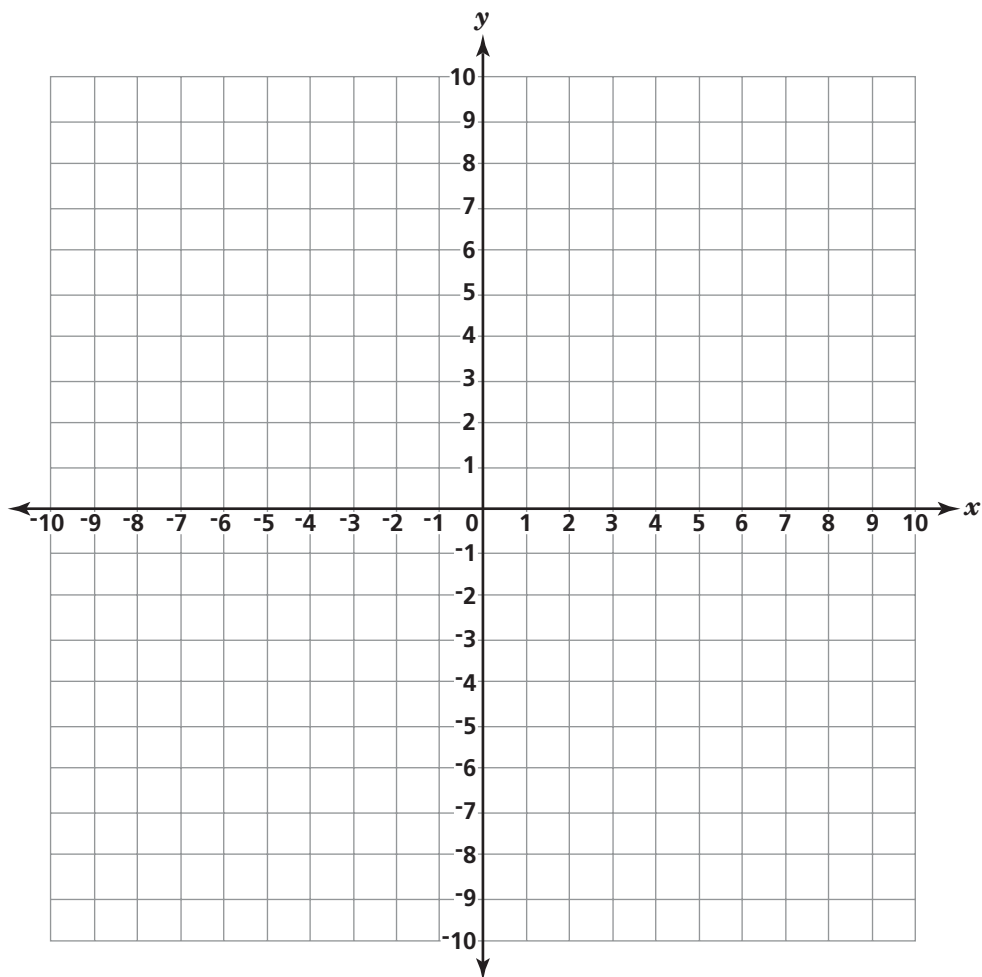
Part B

If each square on the graph represents one city block, what are the length and width of Central Park?

Show your work.

Answer _____

Part C

What is the perimeter of Central Park?

Show your work.

Answer _____

Go On

9 The temperature in Salt Lake City was $^-10.6°$C. Which absolute value equation **best** describes how many degrees the temperature was below 0°C?

A $|^-10.6| = ^-10.6$

B $|^-10.6| = ^-10$

C $|^-10.6| = 10$

D $|^-10.6| = 10.6$

---

10   What is 1,476 divided by 12?

Show your work.

Answer _____

11 A piece of wood that is $\frac{3}{4}$ meter long is being cut into smaller pieces that are each $\frac{1}{10}$ meter long. Which expression could be one of the steps in determining how many of those pieces can be made?

A $\frac{3}{4} \times \frac{1}{10}$
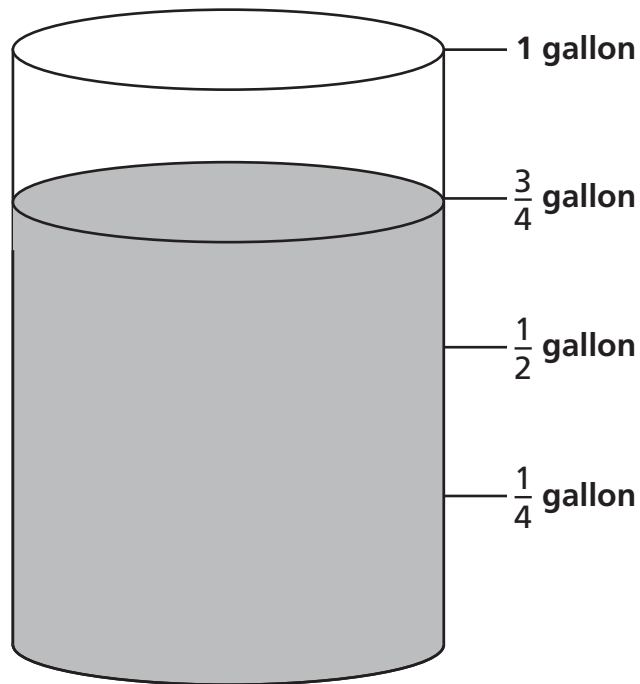
B $\frac{3}{4} \times \frac{10}{1}$

C $\frac{10}{1} \times \frac{4}{3}$

D $\frac{1}{10} \times \frac{3}{4}$

Go On

12 Wellington is hosting a graduation party. He poured some pineapple juice from the container shown below for his guests. The figure shows how much pineapple juice was left in the container after Wellington poured some out.

Part A

The amount of pineapple juice shown is $\frac{6}{7}$ of the amount originally in the container.

How much pineapple juice was in the container originally?

Show your work.

Answer _____

Part B

Suppose Wellington pours $\frac{1}{8}$ gallon from the remaining pineapple juice into a glass, and then repeats with more glasses until the container is empty. How many glasses of pineapple juice will Wellington pour?

Show your work.

Answer _____

Part C

Suppose one of the guests then takes some sips of pineapple juice from one of the glasses. Each sip is $\frac{1}{64}$ gallon, or 2 ounces. How many sips can the guest take before the glass is empty?

Show your work.

Answer _____

Part D

Suppose the container had been completely full instead of $\frac{3}{4}$ full when Wellington began pouring the pineapple juice into glasses. How many more glasses of pinapple juice could he have poured? Explain your reasoning.

_____

_____

Go On

13 One January, the low temperature in Denver was −12°F and the low temperature in Chicago was −17°F.

Part A

Which statement is *true*?

A   Since −12 < −17, it was colder in Denver than in Chicago.

B   Since −12 > −17, it was colder in Denver than in Chicago.

C   Since −12 < −17, it was colder in Chicago than in Denver.

**D**   Since −12 > −17, it was colder in Chicago than in Denver.

Part B

Suppose the low temperature in Philadelphia was −14°F. Which statement is *true*?

A   Since −14 < −12, it was colder in Philadelphia than in Denver.

B   Since −14 > −12, it was colder in Philadelphia than in Denver.

C   Since −14 < −17, it was colder in Philadelphia than in Chicago.

D   Since −14 > −17, it was colder in Philadelphia than in Chicago.

14 A painter charges $20 for every hour that he paints. Let h equal the number of hours he paints and e equal his earnings. Which statements are true? Mark all that apply.

A   The equation $h = 20e$ shows the correct relationship between the earnings and the hours worked.

B   With this hourly rate, the painter must work more than 12 hours to earn $500.

C   With this hourly rate, the painter earns $20h$ dollars for each hour worked.

D   With this hourly rate, if the painter works 10 hours, he earns $20.

E   If the painter raises his hourly rate by $2, the new equation to calculate his earnings is $e = 22h$.

15   Look at the coordinate grid below.
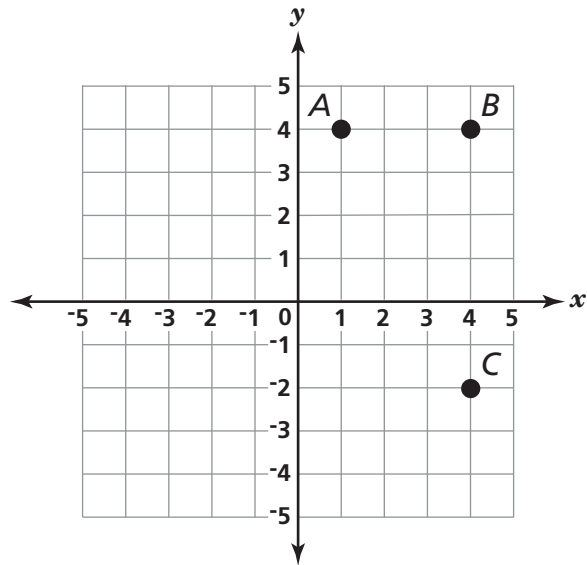
Part A

What is the distance between points *A* and *B*?

A   2 units

B   3 units

C   4 units

D   5 units

Part B

What is the distance between points *B* and *C*?

A   2 units

B   4 units

C   6 units

D   8 units

Go On

16 An appliance manufacturer recommends keeping the freezer set at $^-20°C$.

Part A

What is $|^-20|$?

Answer _____

Part B

Explain what the absolute value tells you about $^-20°C$.

_____

_____

_____

Part C

A temperature of $^-20°C$ is the same as a temperature of $^-4°F$. What is $|^-4|$, and what does it tell you about $^-4°F$?

_____

_____

_____

17 Which equation is true for any value of y?

A $4y^2 + 2 = (4y \times 4y) + 2$

B $4y^2 + 2 = (4y + y) + 2$

C $4y^2 + 2 = 4(y + y) + 2$

D $4y^2 + 2 = 4(y \times y) + 2$

---

18 What is the product of 14.5 and 20.2?

Show your work.

Answer _____

Go On

19   The distances and times of practice runs for four students on a cross-country team are shown in the table below.

Runner	Distance (miles)	Time (minutes)
Sean	3	21
Gwen	4	32
Marc	5	30
Imani	2	14

Which statements are correct? Mark all that apply.

A   Sean's average time per mile was 7 minutes.

B   Gwen's average time per mile was 8 minutes.

C   Marc's average time per mile was 7 minutes.

D   Imani's average time per mile was 6 minutes.

E   Marc had the slowest average time per mile.

F   Sean had the fastest average time per mile.

20 As part of a new fitness plan, Sabir walks on a treadmill at the same speed for 15 minutes every morning. The table shows the calories he burns over time.

| Time (in minutes)	Number of Calories Burned
3	15
6	30
9	45
12	60

Part A

Write an equation to represent the relationship between the time Sabir walks and the number of calories he burns. Use x as the independent variable and y as the dependent variable.

Equation _____

Part B

Plot the points in the table on the graph shown below. Label the axes of the graph and choose an appropriate scale for each axis.

CALORIES BURNED OVER TIME
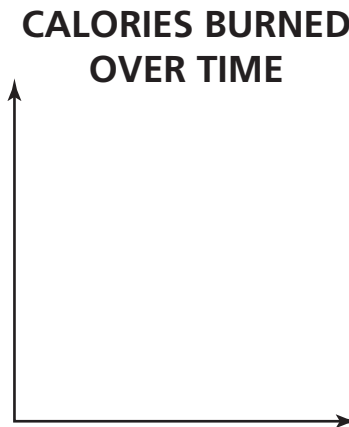
Part C

How many calories will Sabir have burned at the end of his 15-minute workout?

Answer _____

STOP

Section 2 (Calculator-Active)

Answer questions 21–40. Answer questions outlined in orange in your test book. Answer all other questions on the Answer Form. You may use a calculator.

21 Which statement about a data set provides the *most* information about the variability of the data?

    A   The mean of the data set is 28.

    B   The median of the data set is 30.

    C   The range of the data set is 18.

    D   The maximum of the data set is 40.

22 Consider the expression below.

$$3x - (2y^2 + z^3)$$

Consider all positive values of x, y, and z that are less than 1. Which order of values would give the expression the greatest value?

    A $x < y < z$

    B $x < z < y$

    C $y < z < x$

    D $z < y < x$

23 A contractor digs a rectangular hole that is 40 feet long and $10\frac{1}{2}$ feet deep.

Part A

What is the width of the hole if 6,510 cubic feet of dirt is removed?

A   80 feet

B $81\frac{1}{4}$ feet

C   16 feet

D $15\frac{1}{2}$ feet

Part B

If the contractor digs the hole 2 feet deeper, how much additional dirt will he remove?

A   500 cubic feet

B   620 cubic feet

C   1,000 cubic feet

D   1,240 cubic feet

Go On

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24 A school's intramural league wants to rent out a laser tag arena by the hour. It is comparing the prices of four different arenas.

Part A

The table shows the price of Arena A for different numbers of hours. Suppose Arena A charges at a constant rate. Fill in the missing values in the table.

Hours		5	9	
Price (in dollars)	500	1,250		3,500

Part B

The information the school got from the four arenas is shown below.

Arena A

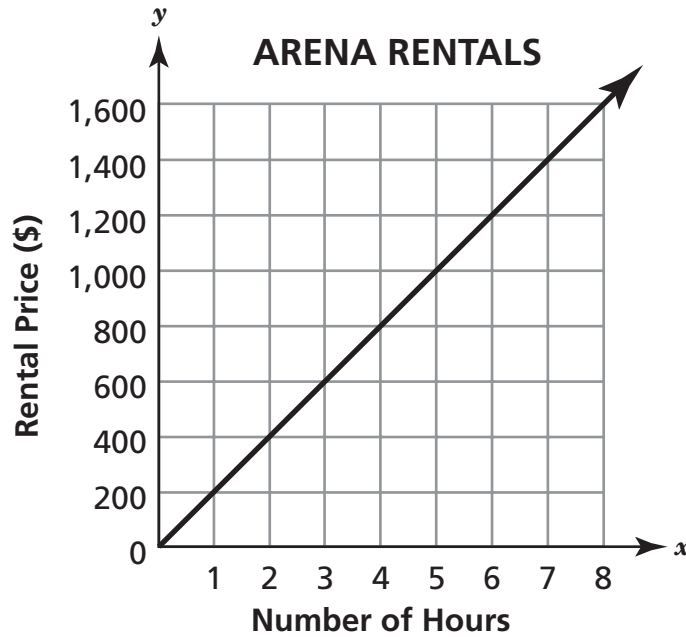| Hours		5	9	
Price (in dollars)	500	1,250		3,500

Arena B

$P = 275h$, where P represents the price of the arena, and h represents the number of hours it is rented out.

Arena C

Arena C charges at a constant rate, and the price is $1,800 for 8 hours.

Arena D

ARENA RENTALS

Choose from the labels below to write the order of the four arenas from lowest price to highest price.

Arena A	Arena B	Arena C	Arena D

Lowest	
Highest	

Part C

The intramural league decided to choose the arena closest to the school. The arena charged $4,950 for 18 hours of use. Which arena did the intramural league choose?

Answer _____

Go On

25 Which expression *best* represents the statement?

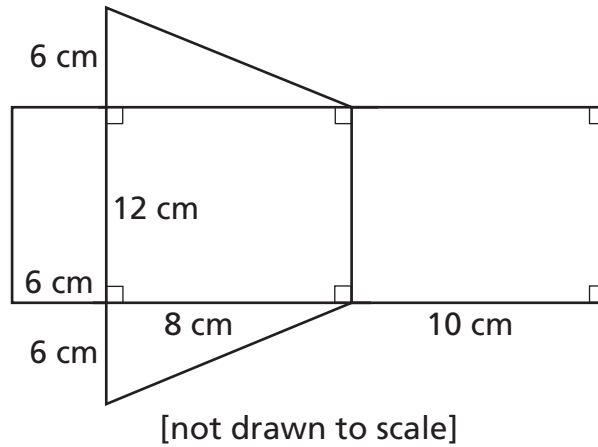"A number multiplied by 4 is subtracted from the difference of the same number and 65."

A $4x - (x - 65)$

B $4x - x - 65$

C $(x - 65) - 4x$

D $x - 65 + 4x$

26 Use the net shown below.

6 cm

12 cm

6 cm

6 cm

8 cm

10 cm

[not drawn to scale]

Part A

What is the three-dimensional figure called?

A   triangular prism

B   rectangular prism

C   triangular pyramid

D   rectangular pyramid

Part B

What is the surface area of the three-dimensional figure?

A   288 cm²

B   312 cm²

C   336 cm²

D   368 cm²

Go On

27 What is the expression $(0.3)^2 - (0.2)^3 \cdot (0.5)$ simplified?

Show your work.

Answer _____

---

28 Suppose you are a sportswriter who writes a column covering a local baseball league. The table below shows the number of home runs hit last year by each of the 8 teams in the league.

Team	Number of Home Runs
Americans	54
Bombers	48
Comets	50
Dingers	36
Exterminators	50
Flames	44
Ghosts	39
Hurricanes	55

Part A

What is the mean number of home runs hit by these teams last year? Fill in the blank to complete the statement.

Answer The mean number of home runs hit by these teams last year is _____.

Part B

What is the median number of home runs hit by these teams last year? Fill in the blank to complete the statement.

Answer The median number of home runs hit by these teams last year is _____.

Part C

What are the first quartile and the third quartile for the number of home runs hit by a team last year? Fill in the blanks to complete the statement.

Answer The first quartile for the number of home runs hit by a team last year is _____,

and the third quartile is _____.

Part D

What is the interquartile range for the number of home runs hit by a team last year? Fill in the blank to complete the statement.

Answer The interquartile range for the number of home runs hit by a team last year

is _____.

Part E

What is the mean absolute deviation for the number of home runs hit by a team last year? Fill in the blank to complete the statement.

Answer The mean absolute deviation for the number of home runs hit by a team last year
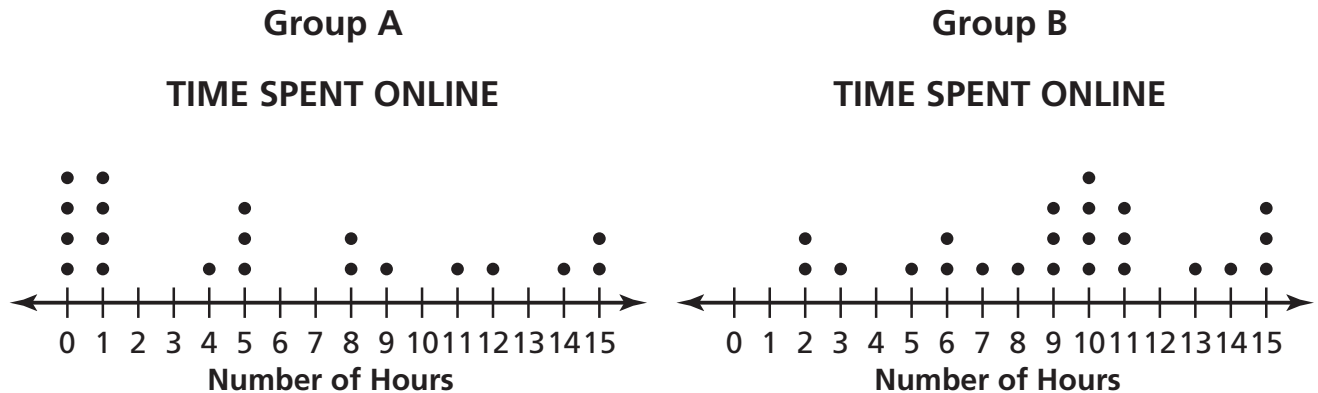
is _____.

Part F

How could you describe the number of home runs hit by the Flames using some of the statistics you calculated in Parts *A* through *E*?

_____

_____

Go On

29 The dot plots show the numbers of hours two different groups of students spend online each week.

Which statement correctly compares the data?

A The measures of center are closer to each other for Group A than for Group B.

B The measures of center are higher for Group A than for Group B.

C The variability in Group A is greater than the variability in Group B.

D The variability in Group A is less than the variability in Group B.

30 A survey conducted at a local pet store included a section about dogs. Which of these questions is a statistical question and should be included on the survey?

A "How many legs does a dog have?"

B "How many dogs do you own?"

C "Is a veterinarian a doctor for dogs?"

D "Is a kennel a shelter for dogs?"

31 An art museum has been keeping track of the number of visitors it has each day, week, month, and year.

Part A

On a particular Saturday, 60% of the visitors to the art museum were students. If 144 students visited the museum, how many total visitors did the art museum have that day?

A 200

B 204

C 220

D 240

Part C

During a particular week, the art museum had 1,600 visitors, and that was 40% of the total number of visitors for the month. How many total visitors did the art museum have that month?

A 2,000

B 2,500

C 4,000

D 5,000

Part B

On a particular Sunday, the art museum had 285 visitors, and that was 20% of the total number of visitors for the week. How many total visitors did the art museum have that week?

A 1,245

B 1,425

C 2,490

D 2,850

Part D

During a particular month, the art museum had 2,800 visitors, and that was 8% of the total number of visitors for the year. How many total visitors did the art museum have that year?

A 22,400

B 30,000

C 32,500

D 35,000

Go On

32 A sporting goods store offers a 40% discount on all golf clubs. Rocco spent 20% of the money in his savings account on a golf putter. He paid $48 for the putter after the discount.

Part A

How much money did Rocco have in his savings account before buying the putter?

Show your work.

Answer _____

Part B

Rocco wants to use the rest of the money in his savings account to buy a set of golf irons that has an original price of $350. Does Rocco have enough money to buy the golf irons? Explain.

_____

_____

_____

_____

Part C

Rocco's friend works at the sporting goods store and gets 10% off the already discounted price. If Rocco's friend buys the golf irons for him, how much will his friend have to pay?

Show your work.

Answer _____

33 Rammy has saved some money for a new bicycle helmet that costs $47, but needs to save more. He writes an addition equation with a variable to represent the amount of money that he still needs to save.

Which must be true about Rammy's equation?

A The amount he has saved and the cost of the helmet are on the same side of the equation.

B The amount he has saved and the variable are on the same side of the equation.

C The cost of the helmet and the variable are on the same side of the equation.

D He can not write an addition equation to represent the problem.

34 Julian spent an equal amount of money every day on his 6-day vacation. He spent less than $300 on vacation. Which dollar amounts could represent the amount Julian spent each day? Mark all that apply.

A $42

B $44

C $46

D $48

E $50

F $52

Go On

35 The table below shows the numbers of tickets, *x*, sold at a carnival and the amounts of money, *y*, in dollars collected for the tickets.
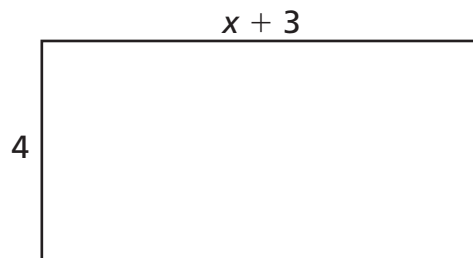
COST OF CARNIVAL TICKETS

Number of Tickets	Amount Collected ($)
5	$15
10	$30
15	$45
20	$60
25	$75

Which equation represents the relationship between tickets sold and money collected?

A $y = x + 10$

B $y = 5x$

C $y = x + 15$

D $y = 3x$

36 The rectangle shown below has an area of $4(x + 3)$ square units.

$x + 3$

4

Part A

Use the distributive property to write an equivalent expression for the rectangle's area.

Area _____

Part B

If the dimensions of the rectangle are doubled, what is the area of the new rectangle in terms of *x*?

Show your work.

Area _____

Part C

What is the ratio of the area of the original rectangle to the area of the larger rectangle from Part B if the value of *x* is 7?
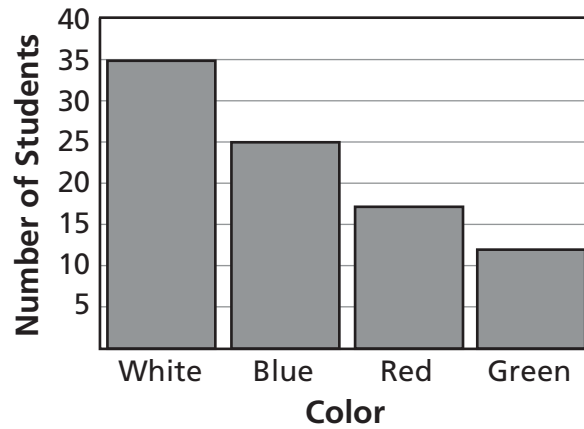
Show your work.

Answer _____

Part D

Would the ratio of the area of the original rectangle to the area of the larger rectangle from Part B be the same for any positive value of *x*? Explain.

_____

_____

_____

_____

Go On

37 Rebecca made this graph to show the colors of shirts students wore to school one day.

Which could have been the group of students Rebecca examined?

A   Students in her homeroom.

B   Students in the cafeteria at lunch.

C   Students sitting in the office.

D   Students playing in one basketball game.

38 Michael starts with $45 in his savings account and adds $5 to the account each week. After *w* weeks, the number of dollars in Michael's account can be represented by the expression below.

$$5w + 25$$

What conclusion can be supported by the expression?

A Michael deposited an extra $20 into his account.

B Michael saved an extra $4 each week.

C Michael withdrew $20 from his account.

D Michael spent $4 from his account.

39 The Millers drove 150 miles in 3 hours, and they are continuing to drive at the same rate. Which statements are true? Mark all that apply.

A It will take them 5 hours to drive 200 miles.

B It will take them 8 hours to drive 400 miles.

C It will take them 14 hours to drive 600 miles.

D It will take them 18 hours to drive 900 miles.

Go On

40 The area of a trapezoid can be calculated with the formula $A = \dfrac{a + b}{2} \times h$, where a and b are the lengths of the bases, and h is the height.

Part A

What is the area of a trapezoid when $a = 2$, $b = 6$, and $h = 9$? Fill in the blank to complete the statement.

Answer The area of a trapezoid when $a = 2$, $b = 6$, and $h = 9$ is _____ square units.

Part B

Choose numbers from the set shown to complete the statement.

2, 4, 8, 24, 36, 48

Answer When $a = 1$, $b = 5$, and $h = $ _____, the area of a trapezoid is _____ square units.

Part C

Choose numbers from the set shown to complete the statement.

3, 5, 7, 30, 40, 50

Answer When $a = $ _____, $b = 7$, and $h = 10$, the area of a trapezoid is _____ square units.

Jenny wrote the formula for the area of a trapezoid as $A = \frac{h}{2} \times (a + b)$. Will her formula give the same area as the formula $A = \frac{a + b}{2} \times h$? Explain your reasoning and give an example to support your claim.

_____

_____

_____

_____

_____

_____

STOP

Name_____

Teacher_____   Grade_____

School_____   City_____   State_____

Assessment 1

Section 1

1. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ
2. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ
4. See page 3.
5. See page 4.
6A. Ⓐ Ⓑ Ⓒ Ⓓ
6B. Ⓐ Ⓑ Ⓒ Ⓓ
7. Ⓐ Ⓑ Ⓒ Ⓓ
8. See page 6.
9. Ⓐ Ⓑ Ⓒ Ⓓ
10. See page 8.
11. Ⓐ Ⓑ Ⓒ Ⓓ
12. See page 10.
13A. Ⓐ Ⓑ Ⓒ Ⓓ
13B. Ⓐ Ⓑ Ⓒ Ⓓ
14. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
15A. Ⓐ Ⓑ Ⓒ Ⓓ
15B. Ⓐ Ⓑ Ⓒ Ⓓ
16. See page 14.
17. Ⓐ Ⓑ Ⓒ Ⓓ
18. See page 15.
19. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ
20. See page 17.

Section 2

21. Ⓐ Ⓑ Ⓒ Ⓓ
22. Ⓐ Ⓑ Ⓒ Ⓓ
23A. Ⓐ Ⓑ Ⓒ Ⓓ
23B. Ⓐ Ⓑ Ⓒ Ⓓ
24. See page 20.
25. Ⓐ Ⓑ Ⓒ Ⓓ
26A. Ⓐ Ⓑ Ⓒ Ⓓ
26B. Ⓐ Ⓑ Ⓒ Ⓓ
27. See page 24.
28. See page 24.
29. Ⓐ Ⓑ Ⓒ Ⓓ
30. Ⓐ Ⓑ Ⓒ Ⓓ
31A. Ⓐ Ⓑ Ⓒ Ⓓ
31B. Ⓐ Ⓑ Ⓒ Ⓓ
31C. Ⓐ Ⓑ Ⓒ Ⓓ
31D. Ⓐ Ⓑ Ⓒ Ⓓ
32. See page 28.
33. Ⓐ Ⓑ Ⓒ Ⓓ
34. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ
35. Ⓐ Ⓑ Ⓒ Ⓓ
36. See page 30.
37. Ⓐ Ⓑ Ⓒ Ⓓ
38. Ⓐ Ⓑ Ⓒ Ⓓ
39. Ⓐ Ⓑ Ⓒ Ⓓ
40. See page 34.

TEACHER USE ONLY

4. ⓪ ① ② ③
5. ⓪ ①
8. ⓪ ① ② ③
10. ⓪ ①
12. ⓪ ① ② ③ ④
16. ⓪ ① ② ③
18. ⓪ ①
20. ⓪ ① ② ③
24. ⓪ ① ② ③
27. ⓪ ①
28. ⓪ ① ② ③ ④ ⑤ ⑥
32. ⓪ ① ② ③
36. ⓪ ① ② ③ ④
40. ⓪ ① ② ③ ④

Cut along the dotted line.