

Ultimate Math Review

Name: _____

Date: _____

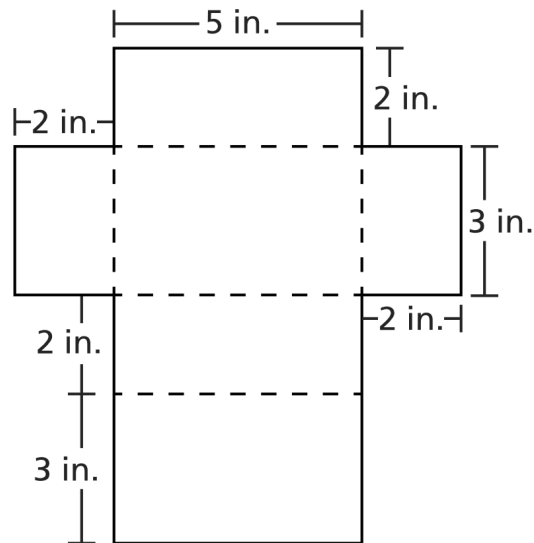
1. The surface area, S , of a right rectangular prism with length l , width w , and height h can be found using the formula below.

$$S = 2(lw + wh + hl)$$

What is the surface area, in square inches, of a prism with a length of 12 inches, a width of 9 inches, and a height of 2 inches?

- A. 300 B. 258 C. 150 D. 92

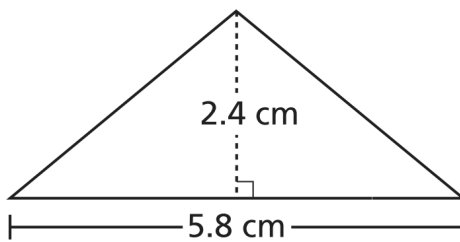
2. A student draws the net below to show the dimensions of a container that is shaped like a right rectangular prism.



What is the surface area, in square inches, of the container?

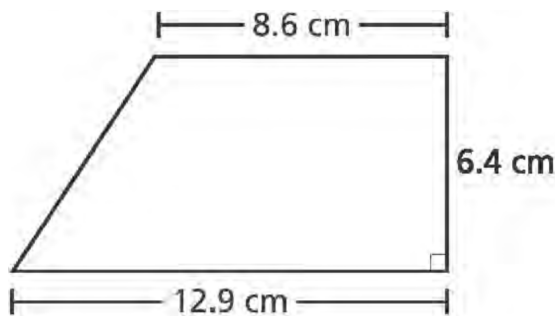
- A. 19 B. 30 C. 38 D. 62

3. What is the area, in square centimeters, of the figure below?



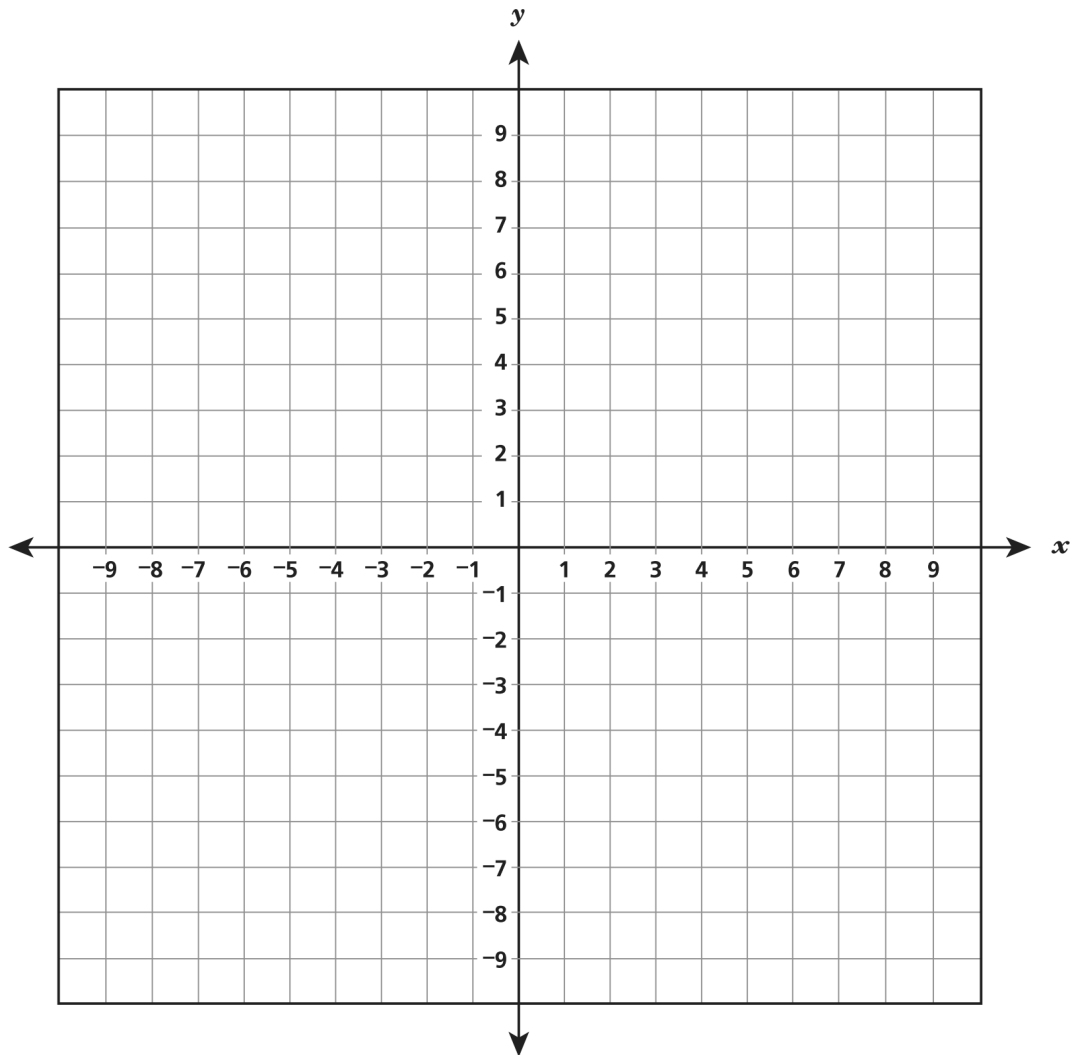
- A. 6.96 B. 10.6 C. 13.92 D. 17.4

4. What is the area, in square centimeters, of the trapezoid below?



5. Graph the polygon $ABCDEF$, which has vertices at the following coordinates, on the coordinate grid below.

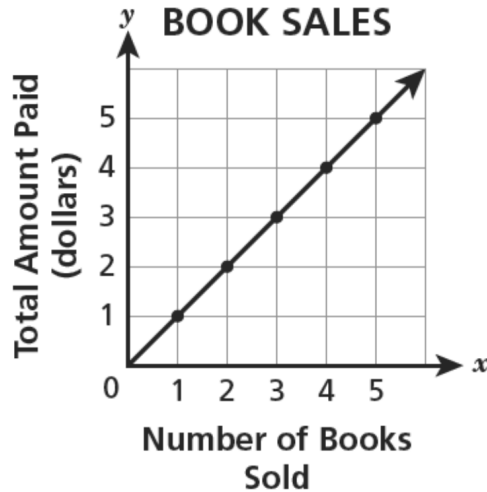
$A(-4, 7)$, $B(6, 7)$, $C(6, -2)$, $D(-8, -2)$, $E(-8, 3)$, $F(-4, 3)$



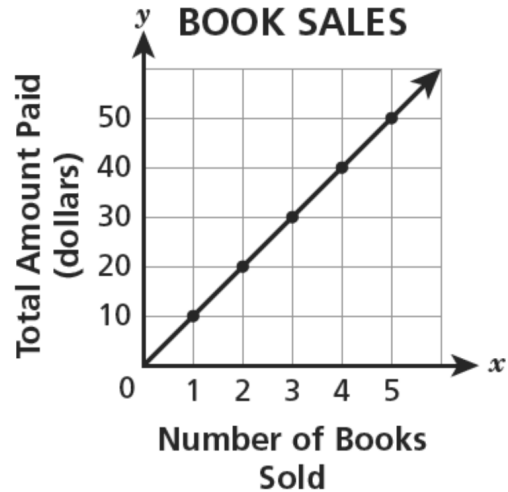
What is the perimeter of polygon $ABCDEF$?

6. A bookstore is selling books for \$10 each. Which graph shows the relationship between the number of books, x , the store sold and the total amount of money, y , paid from the book sales?

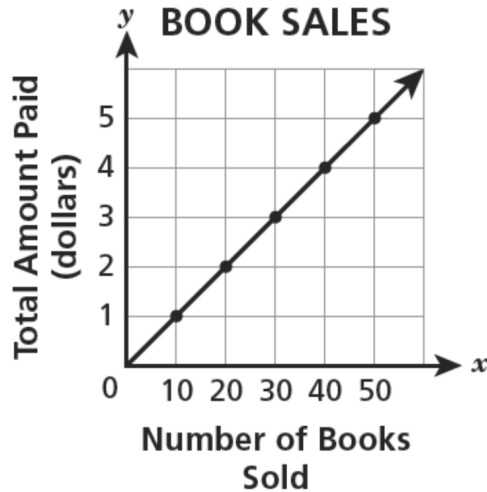
A.



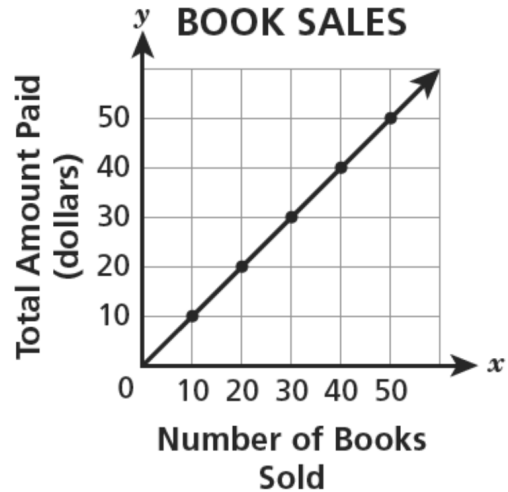
B.



C.



D.



7. John's friend told him that he could earn \$49 for handing out flyers at a local concert. John wants to calculate the hourly rate. If he works a total of 3.5 hours, the equation $3.5x = 49$ can be used to determine his hourly rate. What would John's hourly rate be, in dollars?

A. \$1.40

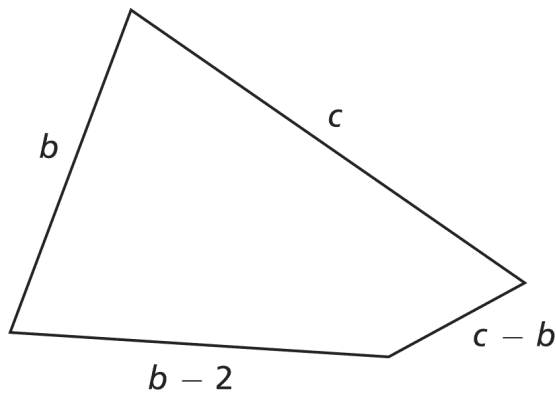
B. \$14.00

C. \$45.50

D. \$171.50

8. Which situation can be represented by the expression $1.3x$?
- A. the total cost of an item that is x dollars more than \$1.30
 - B. the area of a rectangle with side lengths 1.3 and x
 - C. the amount of change when \$1.30 is used to pay for an item costing x dollars
 - D. the number of square feet in each lot when 1.3 acres is partitioned into x equal sections

9. In the diagram of a quadrilateral below, the variables represent the lengths of the sides, in inches.



[not drawn to scale]

Write an expression using the variables b and c that could be used to find the perimeter of the quadrilateral.

If $b = 11$ and $c = 16$ what is the perimeter of the quadrilateral?

10. A leaky faucet is losing water and is filling a 5-gallon bucket every 20 hours. At that rate, how many gallons of water will the faucet leak in 48 hours?

11. Which two expressions are equivalent?

A. $x + x + x$ and x^3

B. $14x + 10 - 2x$ and $16x + 10$

C. $12x + 16x$ and $4(3x + 4x)$

D. $12x^2 + 5x + 10$ and $17x^2 + 10$

12. Which expression is equivalent to $5(4x + 3) - 2x$?

A. $18x + 15$

B. $18x + 3$

C. $7x + 8$

D. $2x + 8$

13. Which expression is equivalent to $60 - 3y - 9$?

A. $3(17 - y)$

B. $3(20 - y) - 3$

C. $17(3 - y)$

D. $20(3 - 3y) - 9$

14. Which expression represents the phrase below?

8 less than the product of 6 and a number, x

A. $8 - 6x$

B. $6x - 8$

C. $(6 + x) - 8$

D. $8 - (6 + x)$

15. Which equation has the solution $x = 2$?

A. $2x - 3 = 19$

B. $3x + 2 = 8$

C. $4x - 4 = -4$

D. $5x + 1 = 10$

16. Expressions A , B , and C are shown below.

$$\begin{array}{ccc} A & B & C \\ 20^2 - 18^2 & 8(4^2) + 2^4 & 15^2 - 3^4 \end{array}$$

Which expression or expressions have the same value as 12^2 ?

17. In which set do all of the values make the inequality $2x - 1 < 10$ true?

- A. {10, 15, 20} B. {5, 7, 9} C. {4, 6, 8} D. {2, 3, 4}

18. The ratio of students to adults on a field trip is 8 to 1. Which table correctly shows this ratio for each grade?

A.

Grade	Number of Students	Number of Adults
6	96	88
7	120	112
8	136	128

B.

Grade	Number of Students	Number of Adults
6	96	104
7	120	128
8	136	144

C.

Grade	Number of Students	Number of Adults
6	96	12
7	120	15
8	136	17

D.

Grade	Number of Students	Number of Adults
6	96	11
7	120	13
8	136	15

19. Arnold's entire workout consisted of 10 minutes of warm-up exercises, 25 minutes of lifting weights, and 15 minutes on the treadmill. What was the ratio of the number of minutes he lifted weights to the total number of minutes of his entire workout?

- A. 1:1 B. 1:2 C. 3:10 D. 5:8

20. A high-speed elevator can rise 480 feet in 30 seconds. Which expression represents the rate, in feet per minute, of the elevator?

A. 480×30

B. $480 \div 30$

C. 480×2

D. $480 \div 2$

21. A punch recipe requires 2 cups of cranberry juice to make 3 gallons of punch. Using the same recipe, what is the amount of cranberry juice needed for 1 gallon of punch?

A. 3 cups

B. $1\frac{1}{2}$ cups

C. 1 cup

D. $\frac{2}{3}$ cup

22. Kira studied data collected on the school basketball team for one season. She noticed that a player on the team had 13 successful free throws out of a total of 20 attempted free throws. To find the percentage of the total free throws attempted by this player that were successful, Kira set up the equivalent ratios below.

$$\frac{13}{20} = \frac{m}{n}$$

What are the values for m and n in Kira's equation?

A. $m = 65$
 $n = 1$

B. $m = 100$
 $n = 65$

C. $m = 93$
 $n = 100$

D. $m = 65$
 $n = 100$

23. The table below lists four masses and their corresponding approximate weights on Earth.

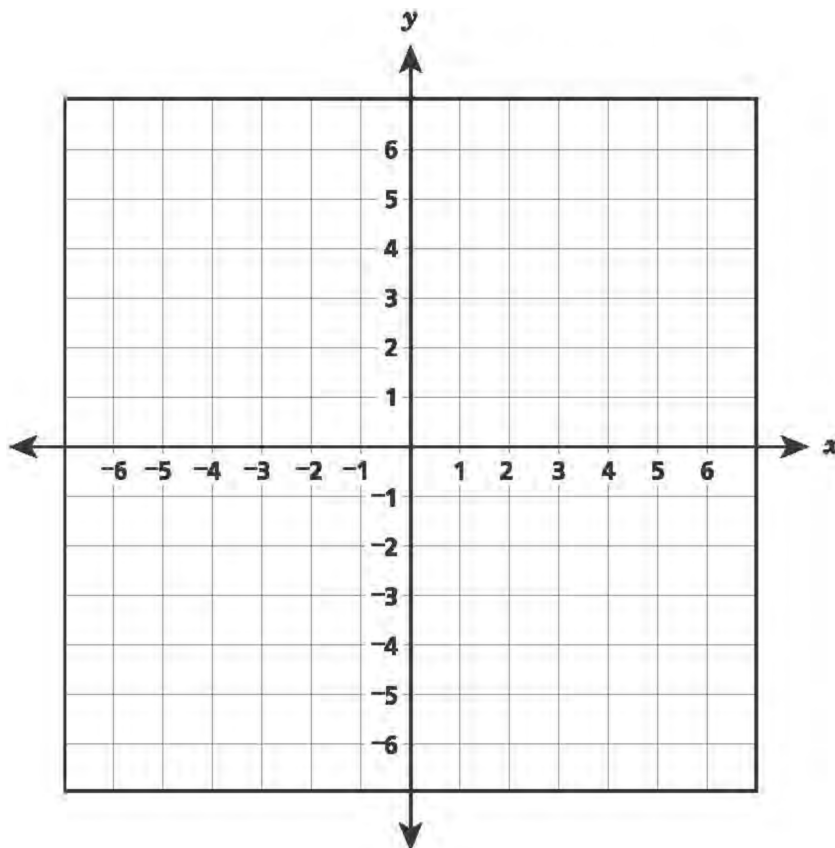
**MASSES AND
CORRESPONDING WEIGHTS**

Mass (kilograms)	Weight (Newtons)
20	196
50	490
x	1078
130	1274
140	1372

The ratio of weight to mass is constant. Which statement describes the ratio of weight to mass and the value of x in the table?

- A. The ratio is $\frac{98}{10}$; $x = 90$
- B. The ratio is $\frac{98}{10}$; $x = 110$
- C. The ratio is $\frac{10}{98}$; $x = 90$
- D. The ratio is $\frac{10}{98}$; $x = 110$
24. Residents of a small city voted on whether to allow a developer to build a shopping center. The number of votes in favor of the shopping center was 4,400. The number of votes against the shopping center was 17,600. What percent of the voters were *in favor* of building the shopping center?
- A. 20%
- B. 25%
- C. 40%
- D. 44%
25. At a concert, 20% of the audience members were teenagers. If the number of teenagers at the concert was 360, what was the total number of audience members?
- A. 432
- B. 450
- C. 1,800
- D. 7,200

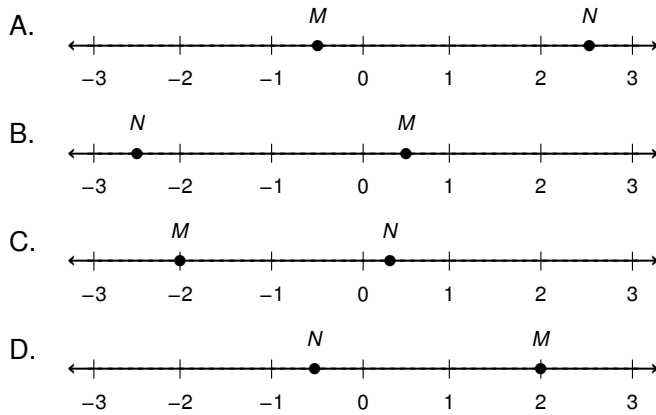
26. Sebastian swam laps every day in the community swimming pool. He swam 45 minutes each day, 5 days each week, for 12 weeks. In that time, he swam 1,800 laps. What was his average rate in laps per hour?
27. Sam paid \$8.28 for 18 stamps. At this rate, how much would it cost Sam to buy 12 stamps?
- A. \$2.19 B. \$2.28 C. \$3.72 D. \$5.52
28. The coordinate grid below represents a town. Curtis's house is at $(-4, -6)$ and Jean's house is at $(-4, 3)$. Plot the points where Curtis's house and Jean's house are located.



Each unit on the grid represents 1 mile. If Curtis can ride his bike at a constant rate of 12 miles per hour, how many minutes would it take Curtis to ride from his house to Jean's house?

29. Point M represents the opposite of $-\frac{1}{2}$ and point N represents the opposite of $\frac{5}{2}$.

Which number line correctly shows points M and N ?



30. Machines S and T were both cleaned this week.

- Machine S is cleaned every 12 weeks.
- Machine T is cleaned every 8 weeks.

What is the *fewest* number of weeks that will pass before both machines are cleaned again in the same week?

- A. 16 B. 24 C. 36 D. 48

31. What is the greatest common factor of 42 and 84?

- A. 7 B. 21 C. 42 D. 84

32. What is the least common multiple of 4 and 10?

A. 14

B. 20

C. 40

D. 60

33. What is the value of $\frac{5}{6} \div \frac{3}{7}$?

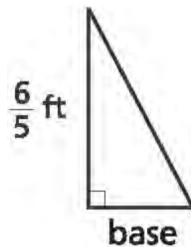
A. $\frac{15}{42}$

B. $\frac{18}{35}$

C. $\frac{35}{18}$

D. $\frac{42}{15}$

34. The area of the triangle below is $\frac{2}{5}$ square foot.



What is the length, in feet, of the base of the triangle?

A. $\frac{24}{25}$

B. $\frac{25}{24}$

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

D. $\frac{3}{2}$

35. The area of a rectangular city park is $\frac{25}{54}$ square miles. The length of the park is $\frac{5}{9}$ mile. What is the width, in miles, of the park?

A. $\frac{4}{9}$

B. $\frac{5}{6}$

C. $1\frac{1}{54}$

D. $1\frac{1}{5}$