

TYPE	# SIDES	ANGLES	COMMENTS
Quadrilateral	4	Angles add up to 360 degrees	All are four sided figures
Parallelogram	Opposite sides parallel		
Rectangle	All angles are 90 degrees		
Square	All angles are 90 degrees		
Rhombus			
Trapezoid	Only one set of sides are parallel		While a quadrilateral, not a parallelogram

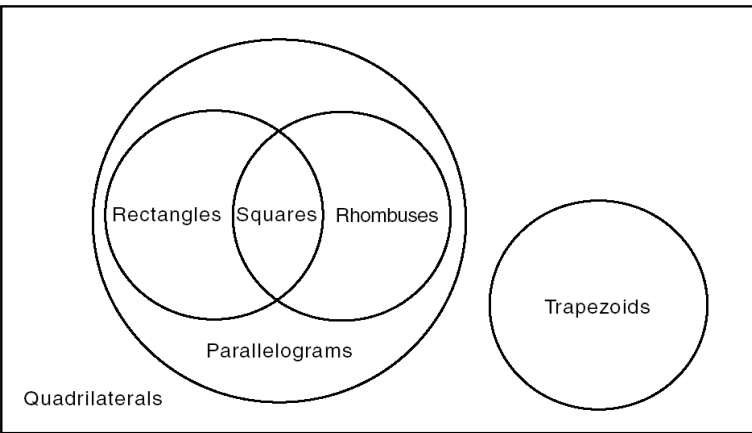
These formulas are located on your formula chart

Perimeter	rectangle	$P = 2l + 2w$ or $P = 2(l + w)$
Area	rectangle	$A = lw$ or $A = bh$
	triangle	$A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$
	trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$ or $A = \frac{(b_1 + b_2)h}{2}$
Volume	prism or cylinder	$V = Bh^*$

Where B=area of the base

Questions on rectangles involve perimeter, area volume. Many are multistep problems that require you to do something with the area, or perimeter or volume .

1.



Which of the following is a valid conclusion based on the diagram shown above?

- A All rhombuses are squares.
- B All rhombuses are rectangles.
- C All quadrilaterals are parallelograms.
- D All rectangles are parallelograms.

2.

Doris had a circular garden with a radius of 30 feet. She used all of the fencing from the circular garden to enclose a square garden. The length of each side of Doris's square garden was approximately —

- A 47 feet
- B 94 feet
- C 120 feet
- D 188 feet

Circumference of a

$$\text{circle} = \pi r^2 = \pi d$$

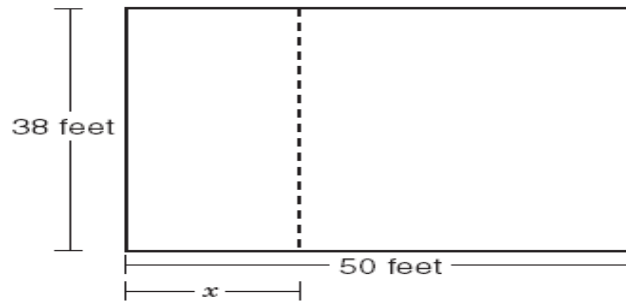
So, how much fence did she have? _____

A square has 4 sides that are _____.

How long will each side be? _____

3.

9 A large room has the dimensions shown below. A partition is to be installed so that 2 classes can use it. The area of the smaller classroom is $38x$. How can the area of the larger classroom be expressed in terms of x ?



- A $50 - 38x$
- B $\frac{38(50)}{3x}$
- C $\frac{(50 - x)}{38}$
- D $38(50 - x)$

Formula for Area is $A =$ _____

Area of the total room is _____ * _____ + _____

It tells you that the area of the partition is $38x$. Why? _____

Lets say that $x=10$

How long is the room left when we take away 10 ft? _____

How did you get that?

_____.

Okay, replace the 10 with "x" _____.

That is the length. Now we want

$L * W$ _____

What is the area of the new room? _____

4.

A 12- by 16-foot rectangular floor will be covered by square tiles that measure 2 feet on each side. If the tiles are not cut, how many of them will be needed to cover the floor?

- A 192
- B 96
- C 48
- D 14

CLASS DEMO

Draw it.

Mark off two foot increments on the sides and draw in the tiles. Count them.

Math $A = L * W =$ _____ * _____ = _____

Each tile area $L * W =$ _____ * _____ = _____

Divide . Answer _____

5.

A rectangle has an area of 144 square inches and a perimeter of 50 inches. What are the dimensions of the rectangle?

- A 10 in. by 15 in.
- B 9 in. by 16 in.
- C 8 in. by 18 in.
- D 4 in. by 36 in.

We could do this the hard way and set up a complicated system of equations...but why.

Formula for Area? _____

Formula For perimeter? _____

How about guess and check?

A $A =$ _____ $P =$ _____

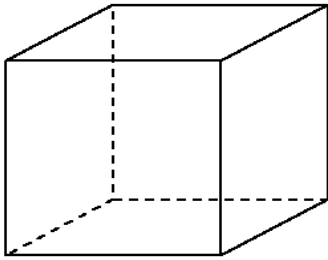
B $A =$ _____ $P =$ _____

C $A =$ _____ $P =$ _____

D $A =$ _____ $P =$ _____

6.

A 72-inch piece of wire was cut into equal segments, which were then soldered at the ends to form the edges of a cube.



What is the volume of the cube?

- A 216 in.³
- B 576 in.³
- C 729 in.³
- D 1728 in.³

How many edges does a cube have? _____

So, how long is each side? _____

Formula for volume of a cube? _____

What is the volume? _____

7.

A lawn is shaped like a parallelogram with a base of 32 feet and a height of 15 feet. Covering the lawn with grass will cost \$2.60 per square foot. How much money will it cost to cover the lawn with grass?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

Formula for area of a parallelogram? _____

Area of this parallelogram? _____

How much per sq ft? _____ Add, subtract, multiply or divide? _____ Do it.

Record your answer and fill in the bubbles. Be sure to use the correct place value.

0	0	0	0	.	0	0	0
1	1	1	1		1	1	1
2	2	2	2		2	2	2
3	3	3	3		3	3	3
4	4	4	4		4	4	4
5	5	5	5		5	5	5
6	6	6	6		6	6	6
7	7	7	7		7	7	7
8	8	8	8		8	8	8
9	9	9	9		9	9	9

8.

Tony and Edwin each built a rectangular garden. Tony's garden is twice as long and twice as wide as Edwin's garden. If the area of Edwin's garden is 600 square feet, what is the area of Tony's garden?

- A 1200 ft²
- B 2400 ft²
- C 3600 ft²
- D 4800 ft²

Edwin's garden:



Now make the length twice as long and draw in that part of Tony's garden. What will be that parts area? _____ Now make the width twice as long and draw in the rest of Tony's garden. What is that area? Total area? _____

9.

Frieda wants to buy a refrigerator that is 6 feet tall. The refrigerator's width is 1.75 times its depth. Which equation best describes V , the volume of the refrigerator in terms of its depth, x ?

- A $V = 6x + 10.5$
- B $V = x^2 + 1.75x$
- C $V = 1.75x^2 + 6x$
- D $V = 10.5x^2$

CLASS DEMO

$V = \underline{\hspace{2cm}}$

$L(\text{Depth}) = \underline{\hspace{2cm}}$ $W = \underline{\hspace{2cm}}$ $H = \underline{\hspace{2cm}}$

Be careful. This is a quadratic and involves multiplying a x times and x .

$SV = \underline{\hspace{2cm}} * \underline{\hspace{2cm}} * \underline{\hspace{2cm}}$

10.

Mitch wants to use 40 feet of fencing to enclose a flower garden. Which of these shapes would use all the fencing and enclose the largest area?

- F A rectangle with a length of 8 feet and a width of 12 feet
- G An isosceles right triangle with a side length of about 12 feet
- H A circle with a radius of about 5.6 feet
- J A square with a side length of 10 feet

F. Fence used $\underline{\hspace{2cm}}$ Area $\underline{\hspace{2cm}}$

G. Fence used $\underline{\hspace{2cm}}$ Area $\underline{\hspace{2cm}}$

H. Fence used $\underline{\hspace{2cm}}$ Area $\underline{\hspace{2cm}}$

J. Fence used $\underline{\hspace{2cm}}$ Area $\underline{\hspace{2cm}}$

Record your answer and fill in the bubbles. Be sure to use the correct place value.

				.			
0	0	0	0		0	0	0
1	1	1	1		1	1	1
2	2	2	2		2	2	2
3	3	3	3		3	3	3
4	4	4	4		4	4	4
5	5	5	5		5	5	5
6	6	6	6		6	6	6
7	7	7	7		7	7	7
8	8	8	8		8	8	8
9	9	9	9		9	9	9

11.

If the dimensions of a rectangle with a perimeter of 24 inches are tripled, what will be the perimeter in inches of the new rectangle?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

12.

An interior decorator painted two rectangular panels. One panel is 10 feet by 20 feet, and the other is 4 feet by 15 feet. The can of paint she used covers at most 400 square feet. She then used all the paint that remained in the can to completely paint a third rectangular panel. Which of the following is a reasonable estimate of the dimensions of the third panel?

- A 12 ft by 20 ft
- B 15 ft by 15 ft
- C 10 ft by 16 ft
- D 10 ft by 12 ft

How much does she use up by the two panels in the problem?

How many square feet can she still paint? _____

13.

Lisa has a circular piece of cardboard with a 10-inch diameter. She wants to cut a 10-inch-by-2-inch rectangle from the circle. She also wants to cut 10 square pieces that are 1 inch on each side. Which information makes this scenario impossible?

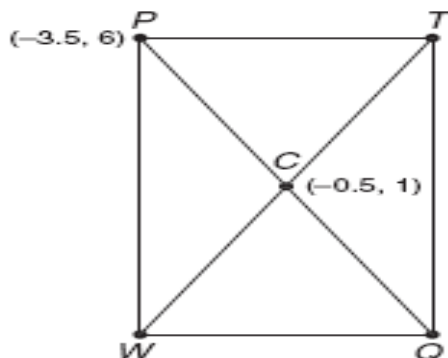
- F There will be no cardboard left after the rectangle has been cut.
- G A 10-inch-long rectangle cannot be cut from the circular cardboard.
- H Squares cannot be cut from the circle.
- J There will not be enough cardboard to cut all the 1-inch-square pieces indicated.

CLASS DEMO:

EXPLAIN:

14.

The midpoint of the diagonals of rectangle $PTQW$ is $(-0.5, 1)$. The coordinates of P are $(-3.5, 6)$. What are the coordinates of Q ?



- A $(-2, 3.5)$
- B $(-6.5, 11)$
- C $(-1.5, 2.5)$
- D $(2.5, -4)$

CLASS DEMO:

USE GRAPH PAPER!

How many units is -3.5 from -0.5 on the x direction? _____

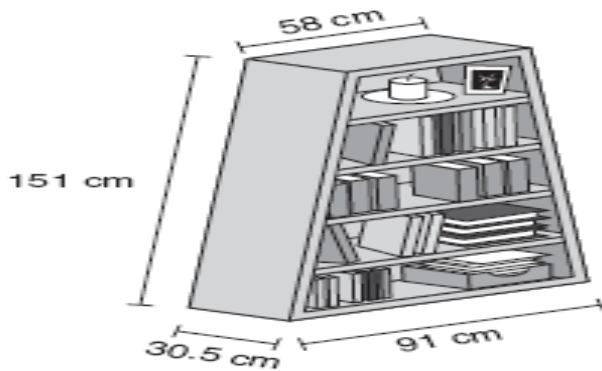
So, what must the x value of line QT be? _____ That answers the questions.

But. How many units is 6 from 1 on the Y direction? So line WQ must be ? _____

The point Q is (\quad , \quad)

15.

Mrs. Wong has a bookcase shaped like an isosceles trapezoid. The height of the bookcase is approximately 150 centimeters. The other dimensions are shown below.



Which of the following is closest to the surface area of the top, left, and right rectangular sides of Mrs. Wong's bookcase?

- A 11,000 cm²
- B 22,000 cm²
- C 36,000 cm²
- D 9,000 cm²

This asks the area of 3 rectangles. The left and the right side are the same. :

Left: L = _____ W = _____ A = _____

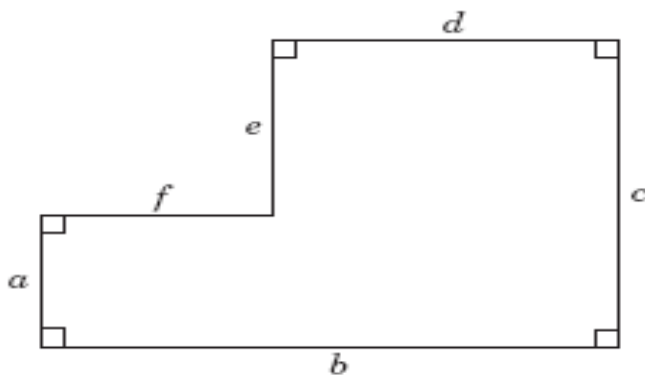
Right is the same

Top L = _____ W = _____ A = _____

Add them up.

16.

Look at the figure shown below.



Which expression does not represent the area of the figure?

- A $bc - ef$
- B $af + ad - de$
- C $de + af + ad$
- D $af + cd$

CLASS DEMO

Block off sections and see what happens.

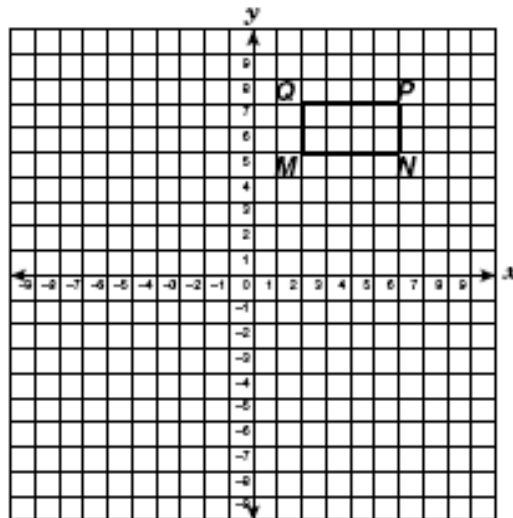
Block off B*C Block off E*F

Block off A*F Block off A*D

Block off D*E Block off C*D

17.

Figure $MNPQ$ is shown on the coordinate plane.



Which transformation creates an image with a vertex at the origin?

- A Rotate figure $MNPQ$ 90° around M
- B Reflect figure $MNPQ$ across the line $x = 1$
- C Reflect figure $MNPQ$ across the line $y = 2.5$
- D Translate figure $MNPQ$ to the left 6 and down 5

A. If you rotate this figure around M, does it get near the origin? _____

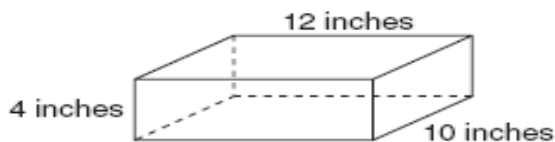
B. Make the line $x = 1$ bold (Not $y = 1$). Now, flip the figure over it...does that get near the origin? _____

C. Make $y = 2.5$ BOLD. Flip it over that line, does it touch the origin? _____

D. Move it left six and down five _____

18.

32 What is the volume of a similar rectangular box with dimensions that are 3.5 times larger than the dimensions of the rectangular box shown below?



- F 5,880 in.³
- G 17,836 in.³
- H 20,580 in.³
- J 1,680 in.³

If you do not multiply each side by 3.5, you will not get the correct answer.

New length _____

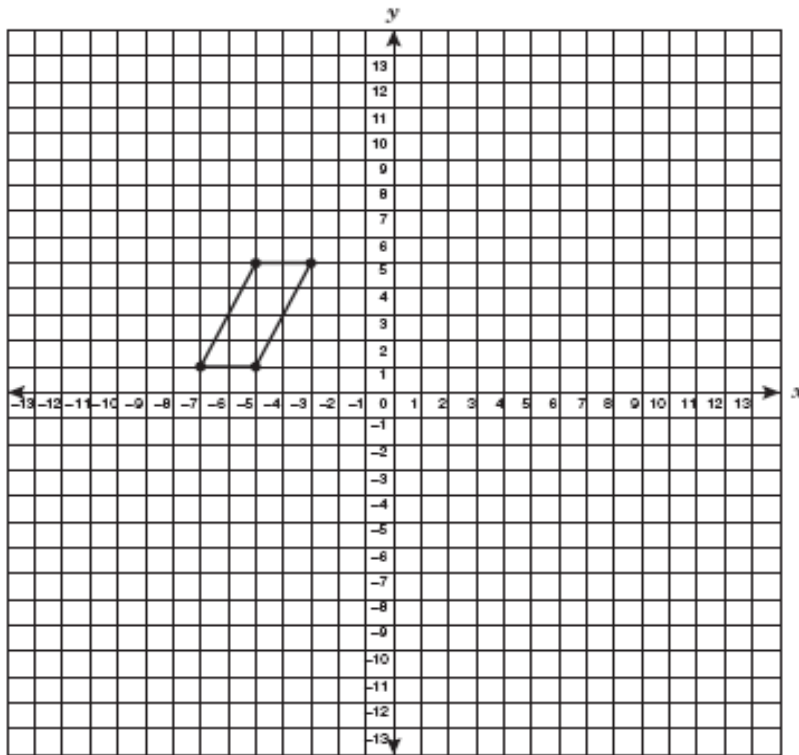
New Width _____

New height _____

New Volume _____

19.

A parallelogram is graphed on the grid.



Which set of coordinates identifies the vertices of a similar figure?

F $(-2, -1), (-4, -1), (-3, -6), (-5, -6)$

G $(0, -2), (0, -5), (8, 1), (8, -2)$

H $(1, 2), (1, 6), (9, 6), (9, 10)$

J $(-1, -1), (0, 3), (2, -1), (3, 3)$

What does similar mean???? _____

Draw each one and see which is in proportion. Hint, how many units tall is

The parallelogram? _____ It is 2 wide by 4 tall

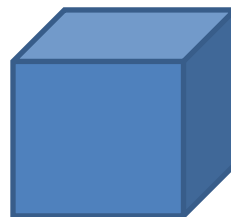
20.

In a three dimensional solid, there are edges, faces and vertices. This is a rectangular prism.

How many edges? _____

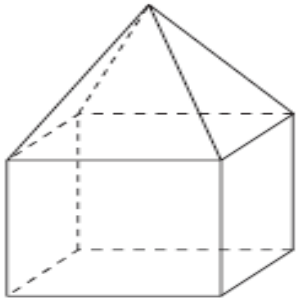
How many sides? _____

How many vertices? _____



21.

How many faces, edges, and vertices does the solid shown below have?



- F** 4 faces, 10 edges, and 7 vertices
- G** 9 faces, 10 edges, and 8 vertices
- H** 10 faces, 16 edges, and 9 vertices
- J** 9 faces, 16 edges, and 9 vertices

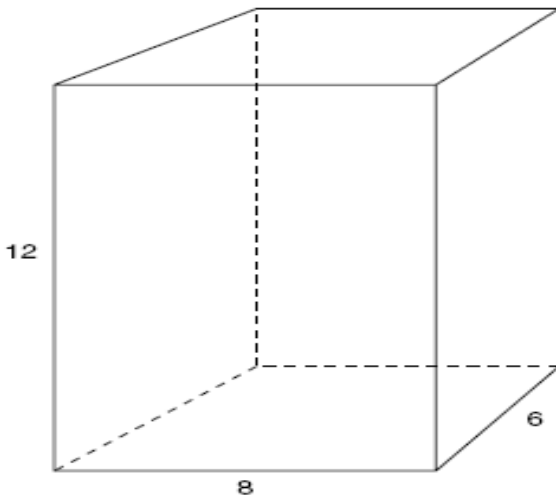
Put an x on each vertex. Then count the x's.

That eliminates ___ and _____

Put a mark on each face and count them _____

22.

6 Which set of dimensions corresponds to a rectangular prism similar to the one shown below?



- F** 2 units by 3 units by 4 units
- G** 4 units by 2 units by 8 units
- H** 2 units by 1 unit by 6 units
- J** 4 units by 3 units by 6 units

This is a ratio. The sides are ___ by ___ by _____.

They must all be divided by the same number.

F. Is there any number you can divide 12,8 and 6 by to get 2,3 4?__

Do the same for all answers.

23.

How many faces, edges, and vertices does a square pyramid have?

- F** 4 faces, 6 edges, and 4 vertices
- G** 5 faces, 6 edges, and 6 vertices
- H** 5 faces, 8 edges, and 5 vertices
- J** 6 faces, 12 edges, and 8 vertices

Draw it

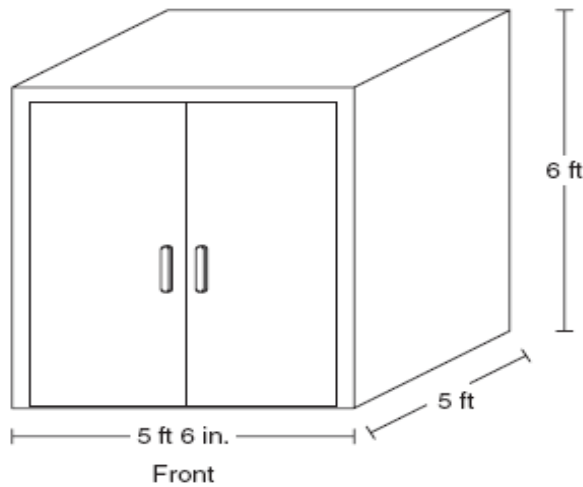
A square pyramid has a base that is shaped like a? _____

So how many faces does it have? _____

How many vertices? ___

24.

Henry built a wooden storage shed in the shape of a rectangular prism for his tools. The figure below shows the dimensions of the storage shed.



If Henry plans to paint only the top, front, left, and right sides of his shed, which is closest to the surface area that will be painted?

- A 121 ft²
- B 181 ft²
- C 154 ft²
- D 91 ft²

Area of the top? _____
 Area of the front _____
 Area of the side _____ Two sides? _____
 Add _____ be careful, 5 ft 6 inch is not 5.6, it is 5.5 (why? _____)

If \overline{JM} is a base and \overline{LM} is a side of isosceles trapezoid $JKLM$, then which statement must be true?

- A \overline{JM} and \overline{KL} are parallel.
- B \overline{LM} and \overline{JK} are parallel.
- C \overline{JM} and \overline{KL} are perpendicular.
- D \overline{LM} and \overline{JM} are perpendicular.

Draw an isosceles trapezoid. Label the sides
 Are there any perpendicular angles in in this trapezoid? _____

Are JM and KL Parallel? _____
 Are LM and JK parallel? _____

26. CLASS DEMO

What is a hexagonal prism? Top shape? _____ Bottom shape? _____

Triangular prism? Top _____ Bottom _____

Triangular pyramid Top _____ Bottom _____

Square pyramid? Top _____ Bottom _____