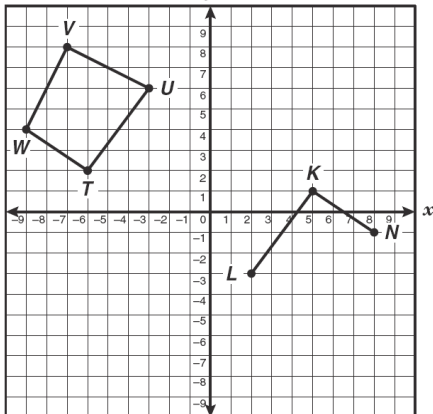


The graph shows quadrilateral $TUVW$, \overline{KN} , and \overline{KL} . At what coordinate point should vertex M be placed to make quadrilateral $KLMN$ congruent to quadrilateral $TUVW$?



- A (6, -4)
- B (4, -5)
- C (5, -5)
- D (6, -5)

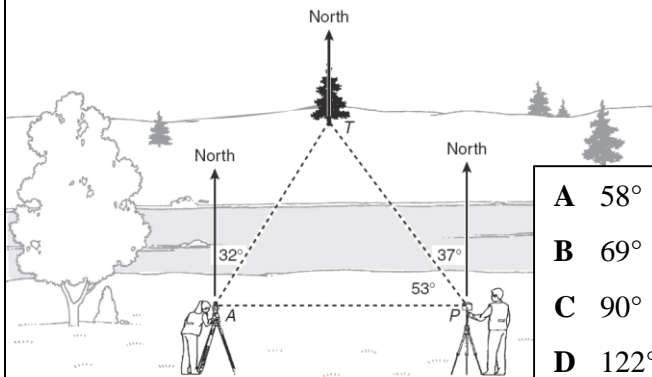
July '06 Obj 6 - # 7

A diagonal walkway through a park is 18 meters long. If the park is a square, how long is one of its sides to the nearest tenth of a meter?

- A 9.0 m
- B 12.7 m
- C 18.0 m
- D 25.5 m

July '06 Obj 6 - # 27

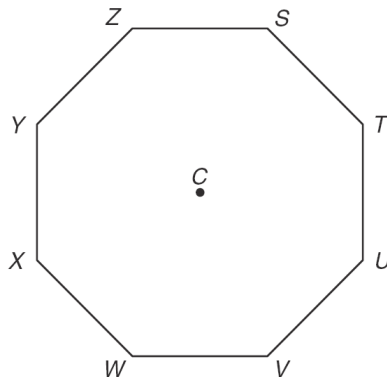
The figure below shows the positions of a surveying crew measuring the distance to a tree across the river. Which of the following best represents the measure of $\angle TAP$?



- A 58°
- B 69°
- C 90°
- D 122°

July '06 Obj 6 - # 19

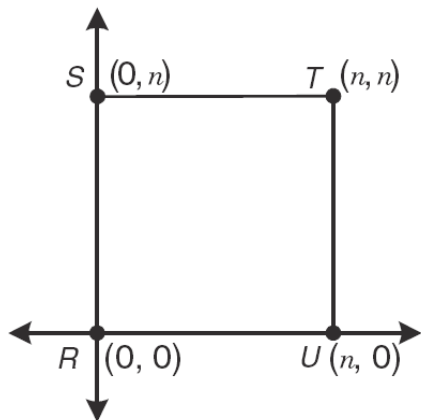
The regular octagon below shows selected positions on a combination lock. The dial of the lock is turned 90° clockwise and then 45° counterclockwise. Which pair of points can describe the starting and ending points of a marker on the dial of this lock?



- A T to U
- B S to V
- C W to V
- D Z to W

July '06 Obj 6 - # 31

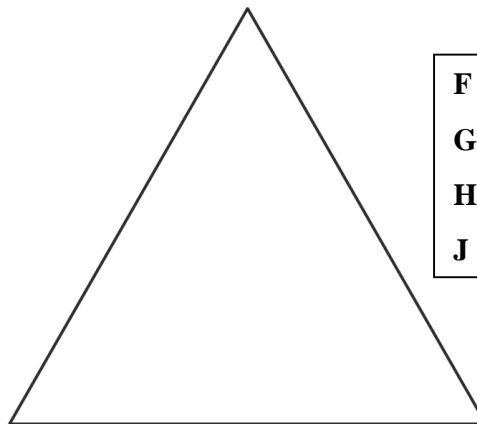
The polygon $RSTU$ is shown below. Which expression represents the area of this polygon?



- F $4n^2$
- G $4n$
- H $2n$
- J n^2

July '06 Obj 6 - # 24

If the perimeter of the equilateral triangle shown below is 37 centimeters, what is the approximate area of the triangle?

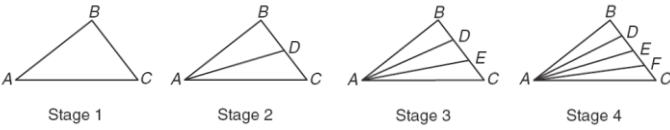


- F 132 cm^2
- G 54 cm^2
- H 33 cm^2
- J 66 cm^2

July '06 Obj 6 - # 46

Objective 6 - Page 2 of 6

Look at the figures and the table below. How many triangles will the n th stage contain?

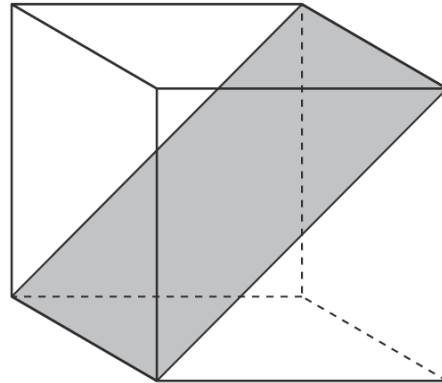


Stage	Number of Triangles
1	1
2	3
3	6
4	10

- F $2^n - 1$
- G $\frac{n^2 + n}{2}$
- H $2n - 1$
- J $\frac{n^2 + 2}{2}$

July '06 Obj 6 - # 54

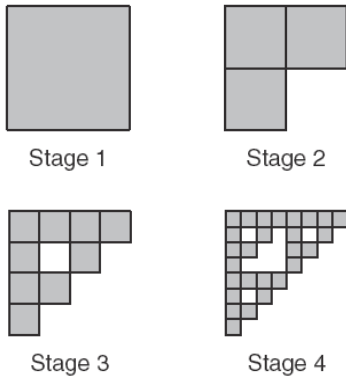
Look at the cube shown below. Which equation best represents the area of the shaded rectangle located diagonally in the cube?



- A $A = s^2\sqrt{3}$
- B $A = \frac{s^3}{2}$
- C $A = s^3\sqrt{2}$
- D $A = s^2\sqrt{2}$

April '06 Obj 6 - # 19

The first 4 stages of a certain fractal are shown below. In each stage after the first, each square is divided into 4 squares, and then the bottom right square is removed. If the pattern continues, how many shaded square units will Stage 5 contain?

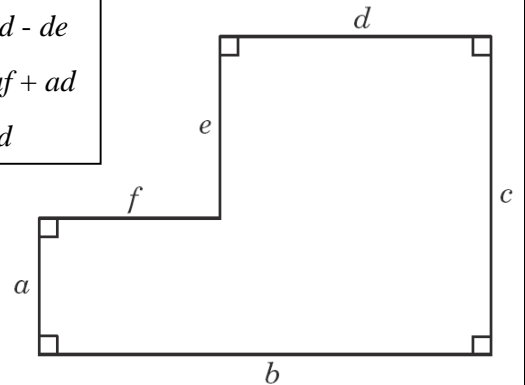


- F 243
- G 54
- H 81
- J 27

April '06 Obj 6 - # 8

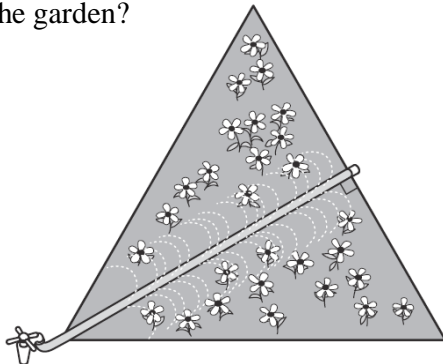
Look at the figure shown below. Which expression does not represent the area of the figure?

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



April '06 Obj 6 - # 33

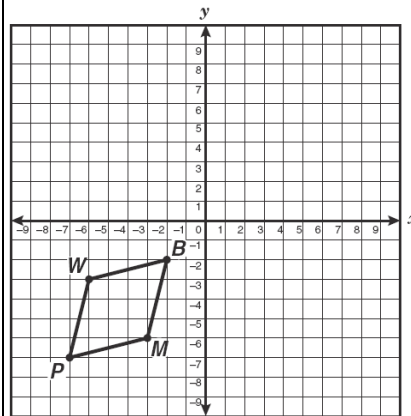
Mr. Schultz has a garden shaped like an equilateral triangle that measures 11 feet on each side. He has placed a watering hose that extends from the faucet located at a vertex to the opposite side, as shown below. Which is closest to the length of the hose in the garden?



- A 7.8 ft
- B 9.5 ft
- C 6.4 ft
- D 5.5 ft

April '06 Obj 6 - # 15

Parallelogram $WBMP$ is shown on the grid below. If $WBMP$ is reflected across the line $y = -x$ and then translated 4 units down to become parallelogram $WB'M'P'$, what will be the coordinates of M' ?

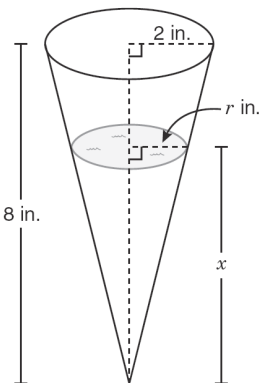


- F (-6, -7)
- G (6, -1)
- H (6, 7)
- J (6, 3)

April '06 Obj 6 - # 36

Objective 6 - Page 3 of 6

The figure below shows a conical cup containing water. The water depth can be represented by x , and the area of the water surface can be represented by A . As the water depth changes, the area of the water surface changes, as shown in the table below.



Water Depth (inches)	Area of Water Surface (square inches)
1	$\frac{\pi}{16}$
2	$\frac{\pi}{4}$
3	$\frac{9\pi}{16}$
4	π
8	4π

April '06 Obj 6 - # 38

The pattern below represents the areas of several squares.

1, 9, 25, 49, ...

This pattern was formed by changing the length of the sides of the squares. How does each new length compare to the previous length?

- F** Each new length is 2 units greater.
- G** Each new length is $2\frac{1}{2}$ units greater.
- H** Each new length is 4 units greater.
- J** Each new length is 8 units greater.

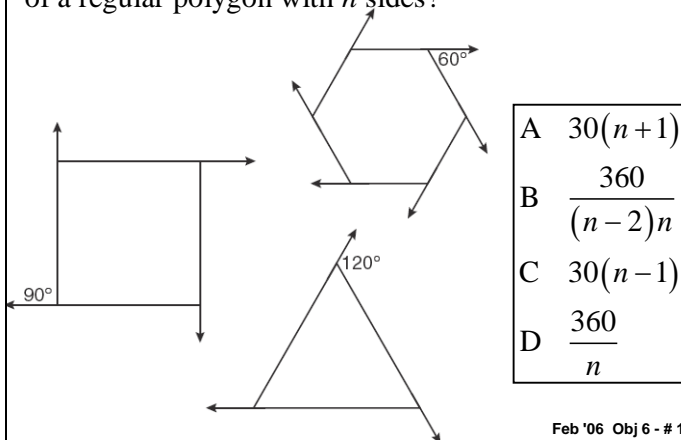
Feb '06 Obj 6 - # 10

Which equation best represents the relationship between the area of the water surface and the water depth?

- F** $A = \frac{\pi(2x-1)^2}{16} \text{ in.}^2$
- G** $A = \frac{\pi x}{2} \text{ in.}^2$
- H** $A = \frac{\pi x^2}{16} \text{ in.}^2$
- J** $A = \frac{\pi x}{16} \text{ in.}^2$

April '06 Obj 6 - # 38 (cont)

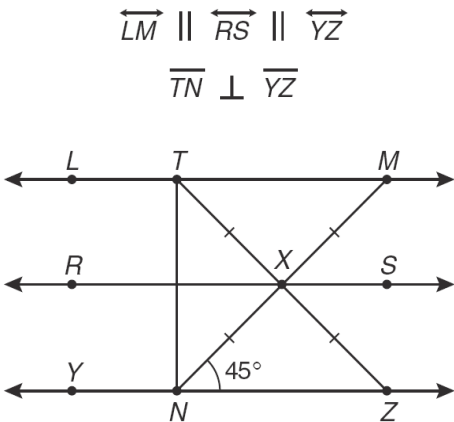
The measure of an exterior angle is shown for each of 3 regular polygons below. Which expression best represents the measure in degrees of an exterior angle of a regular polygon with n sides?



- A** $30(n+1)$
- B** $\frac{360}{(n-2)n}$
- C** $30(n-1)$
- D** $\frac{360}{n}$

Feb '06 Obj 6 - # 13

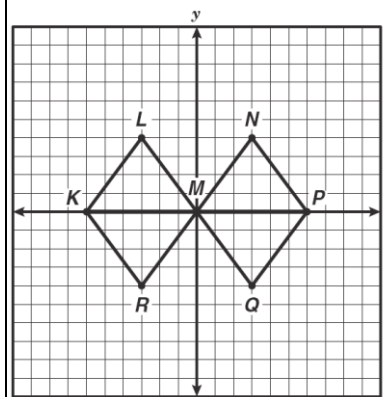
In the figure shown below, $MN = 10$ centimeters. Which is closest to the length of TN ?



- A** 7 cm
- B** 6 cm
- C** 17 cm
- D** 14 cm

April '06 Obj 6 - # 39

Look at the triangles graphed on the grid below. Which of the following correctly describes two triangles, one a single reflection of the other across the x -axis?

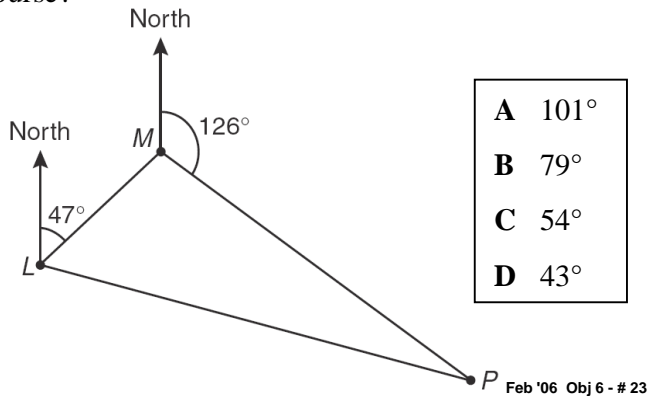


- A** $\triangle KLM @ \triangle PNM$
- B** $\triangle KRM @ \triangle PQM$
- C** $\triangle KRM @ \triangle PNM$
- D** $\triangle KLM @ \triangle KRM$

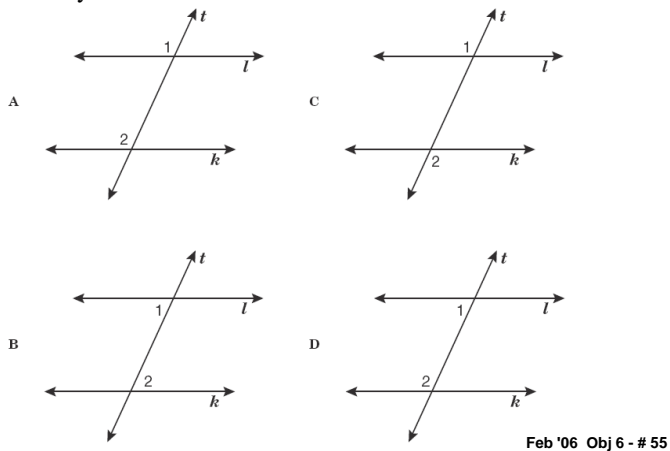
Feb '06 Obj 6 - # 19

Objective 6 - Page 4 of 6

The figure below shows Aaron's recent hiking course, which started at point L , went to point M and then point P , and then returned to point L . What is the measure of $\angle LMP$ formed by Aaron's hiking course?



Mitch drew lines l , k , and t . Lines l and k were parallel to each other. Mitch measured 2 alternate interior angles. He labeled the angles 1 and 2. Which of the following shows angles 1 and 2 correctly labeled?



In $\triangle PKN$, $PN = 14$ inches, $m\angle N = 30^\circ$, and $m\angle K = 90^\circ$. Which is closest to the perimeter of $\triangle PKN$?

- F** 42 in.

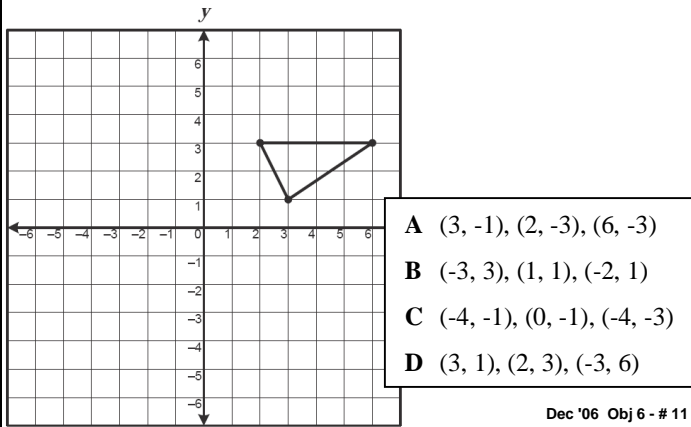
G 33 in.

H 31 in.

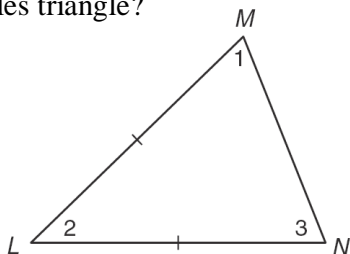
J 28 in.

Feb '06 Obj 6 - # 38

Look at the triangle graphed on the coordinate grid below. Which coordinates are the vertices of a triangle congruent to this figure?



Shown below is $\triangle LMN$, an isosceles triangle. Which equation can be used to find the measure of the vertex angle of this isosceles triangle?



- A** $m\angle 1 = 180^\circ - (m\angle 2 - m\angle 3)$

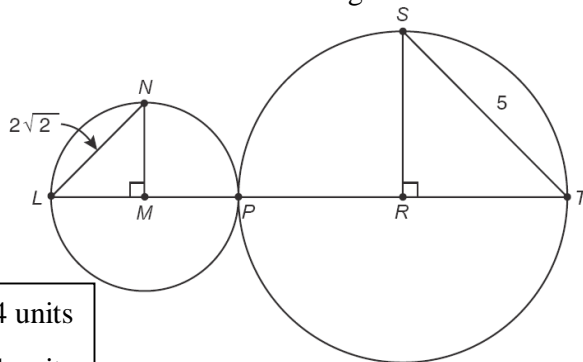
B $m\angle 2 = 180^\circ - (m\angle 1 + m\angle 3)$

C $m\angle 3 = 180^\circ + m\angle 1 - m\angle 2$

D $180^\circ = m\angle 1 - m\angle 2 + m\angle 3$

Feb '06 Obj 6 - # 43

In the figure below, circle M and circle R intersect at point P . Which is closest to the length of LT ?



- F** 14 units

G 11 units

H 18 units

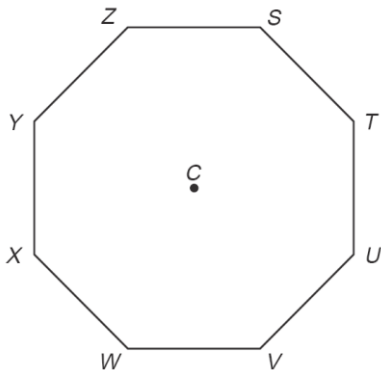
J 16 units

Dec '06 Obj 6 - # 22

Objective 6 - Page 5 of 6

The regular octagon below shows selected positions on a combination lock. The dial of the lock is turned 90° clockwise and then 45° counterclockwise. Which pair of points can describe the starting and ending points of a marker on the dial of this lock?

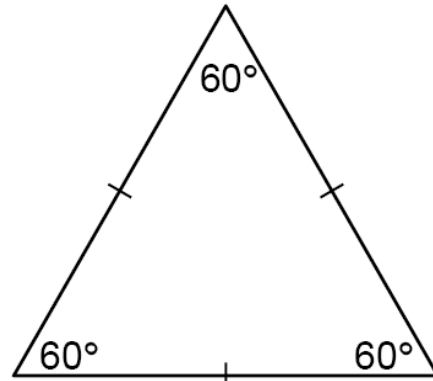
- A** T to U
- B** S to V
- C** W to V
- D** Z to W



Dec '06 Obj 6 - # 25

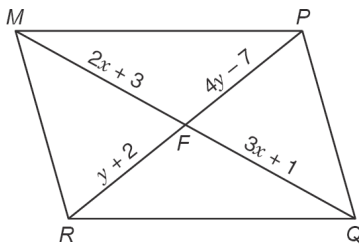
The area of this regular polygon is 72 square inches. Find the approximate length of one side of this polygon.

- A** 12.9 in.
- B** 15.8 in.
- C** 22.3 in.
- D** 24.0 in.



Dec '06 Obj 6 - # 39

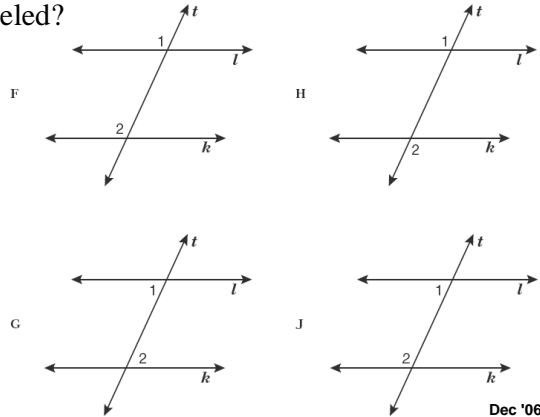
Parallelogram $MPQR$ is shown below. What are the lengths of diagonals MQ and RP ?



- A** $MQ = 10$ and $RP = 14$
- B** $MQ = 7$ and $RP = 5$
- C** $MQ = 14$ and $RP = 10$
- D** $MQ = 2$ and $RP = 3$

Dec '06 Obj 6 - # 29

Mitch drew lines l , k , and t . Lines l and k were parallel to each other. Mitch measured 2 alternate interior angles. He labeled the angles 1 and 2. Which of the following shows angles 1 and 2 correctly labeled?

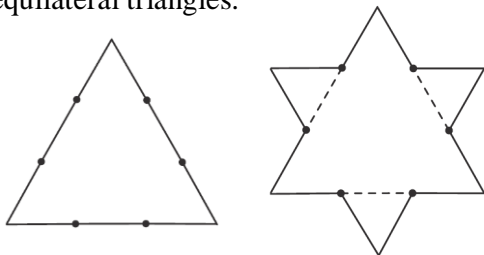


Dec '06 Obj 6 - # 50

A student begins drawing a fractal by dividing each side of an equilateral triangle into 3 segments.

If the student repeats this process on the 12 sides of the second figure, how many sides will the next figure have?

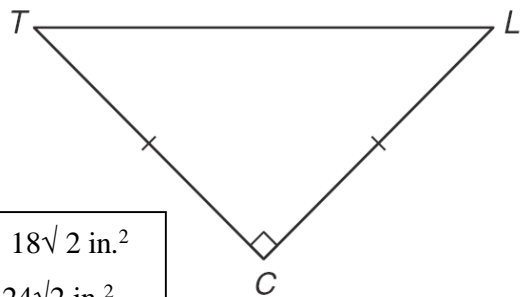
The student then replaces the middle segments with 2 equal segments to form the sides of smaller equilateral triangles.



- F** 24
- G** 36
- H** 48
- J** 60

Dec '06 Obj 6 - # 32

$\triangle TCL$ is shown below. If $TL = 12$ inches, what is the area of $\triangle TCL$?

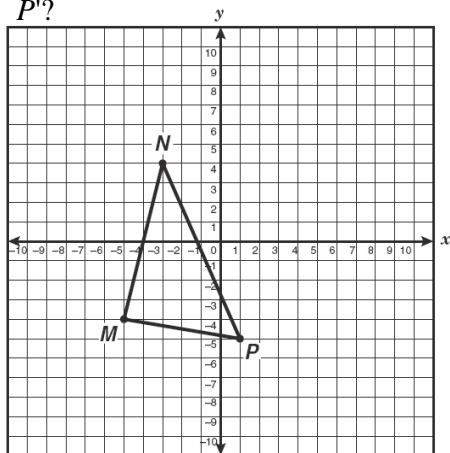


- A** $18\sqrt{2}$ in.²
- B** $24\sqrt{2}$ in.²
- C** 36 in.²
- D** 29 in.²

Oct '06 Obj 6 - # 13

Objective 6 - Page 6 of 6

$\triangle MNP$ is shown below. If $\triangle MNP$ is translated so that point $N(-3, 4)$ is mapped to point $N'(-1, 1)$, which ordered pair best represents either point M' or point P' ?



- A $M'(-2, -6)$
- B $P'(3, -8)$
- C $P'(4, -7)$
- D $M'(-7, -3)$

Oct '06 Obj 6 - # 17

Which expression best represents the area of a circle with a radius of $\frac{1}{3}a$ units?

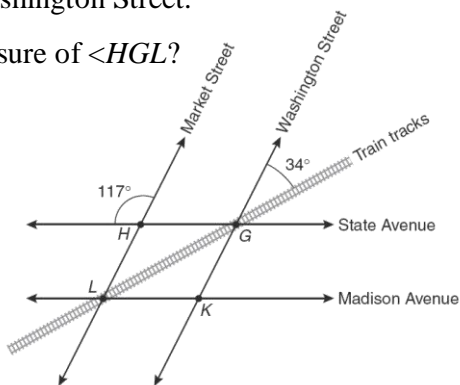
- F $\frac{2}{3}\pi a$ square units
- G $\frac{1}{9}\pi a^2$ square units
- H $\frac{1}{6}\pi a^2$ square units
- J $\frac{1}{3}\pi a$ square units

Oct '06 Obj 6 - # 48

A city council wants to build train tracks through the city's business district. A city planner shows the council a map for the proposed train track. State Avenue is parallel to Madison Avenue. Market Street is parallel to Washington Street.

What is the measure of $\angle HGL$?

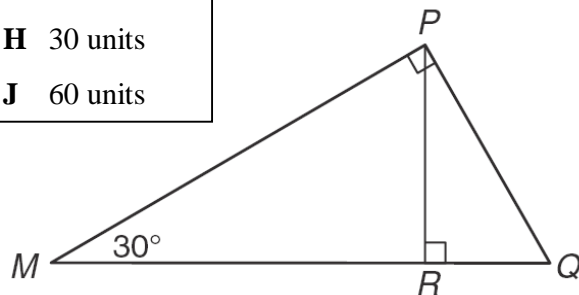
- A 63°
- B 29°
- C 34°
- D 56°



Oct '06 Obj 6 - # 27

In the figure shown below, $\triangle MPQ \sim \triangle PRQ$, $MR = 45$ units, and $RQ = 15$ units. What is the length of PR ?

- F $30\sqrt{3}$ units
- G $15\sqrt{3}$ units
- H 30 units
- J 60 units



Oct '06 Obj 6 - # 52

According to the table, which expression best represents the number of white triangles at any stage, n , in this geometric pattern?

Stage, n	Number of White Triangles	Diagram
1	1	
2	3	
3	9	
4	27	

- A $(n - 1)^{n - 1}$
- B $(2n - 1)^2$
- C $3^{n - 1}$
- D n^2

Oct '06 Obj 6 - # 33

In $\triangle ABC$, $m\angle BAC = (6x + 3)^\circ$ and $m\angle ABC = (3x - 6)^\circ$. Which equation can be used to find $m\angle BCA$?

- A $m\angle BCA = 180^\circ - [(6x + 3)^\circ - (3x - 6)^\circ]$
- B $m\angle BCA = 180^\circ - [(6x + 3)^\circ + (3x - 6)^\circ]$
- C $m\angle BCA = 180^\circ + (6x + 3)^\circ - (3x - 6)^\circ$
- D $m\angle BCA = 180^\circ + (6x + 3)^\circ + (3x - 6)^\circ$

Oct '06 Obj 6 - # 55

