TRIANGLES ON TAKS NAME_____CLASS PD_____DUE_____

LET'S TALK ABOUT TRIANGLES

TAKS writers love triangles. You can hardly turn a page without running into a triangle. They like them acute, obtuse, isosceles, and equilateral, and they particularly like them "right". Remember, no matter what kind of triangle they are, the angles of the triangle always add up to 180 degrees and the longest side is always opposite to the largest angle, the shortest side is opposite to the smallest angle and vice versa.

- ACUTE Triangles – all of the angles are less than 90 degrees.
- SCALENE Triangles – all angles are different
- OBTUSE Triangles – one of the angles is larger than 90 degrees.
- ISOSCELES Triangles – two sides and two angles are equal
- EQUILATERAL Triangles – all sides and all angles are equal
- <u>RIGHT Triangles – One angle is 90 degrees.</u>

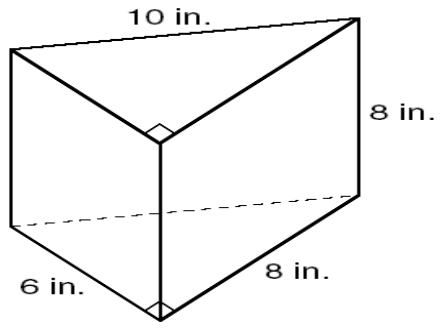
Special Right Triangles	$30^o \quad 60^o \quad 90^o$	$45^o \; 45^o \; 90^o$
	$x, \quad x\sqrt{3}, \quad 2x$	$x, \quad x, \quad x\sqrt{2}$

Area	rectangle	$A = lw$	$A = bh$
	triangles	$A = \frac{1}{2}bh$	$A = \frac{bh}{2}$

Pythagorean Theorem $a^2 + b^2 = c^2$

1.

A triangular prism is shown below.



What is the volume of this triangular prism?

A 192 in.^{3}
B 240 in.^{3}
C 384 in.^{3}
D 480 in.^{3}

- Area of a triangle =_____
- Volume is Area *Height
- A little square in a corner means it is a right triangle.
- In a right triangle, the base and height are the legs of the triangle

- Base =____ Height =___
- Height of prism =____
- We don't need to know the length of the hypotenuse.

2.

Near the downtown area of a city, there is a vacant triangular plot of land with sides that measure 22 feet, 27 feet, and 17 feet. If the city council decides to plant an oak tree in the corner with the smallest angle, where should the tree be planted?

A In the corner opposite the side that is 17 feet

B In the corner opposite the side that is 22 feet

C In the corner opposite the side that is 27 feet

D In the center of the triangular plot

Draw a triangle that has what you think a drawing of this park would look like; making sure the 17 foot side is the shortest side. Now examine the angles.

Match

Smallest angle _____ a. Longest side

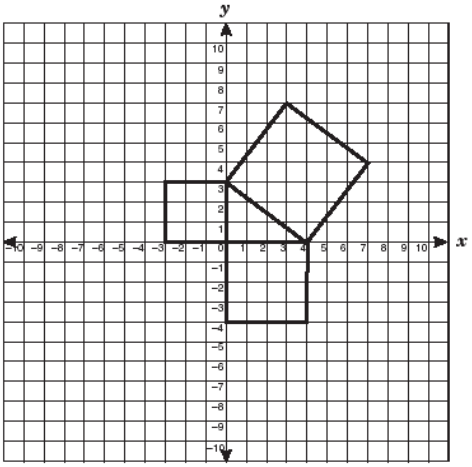
Middle Angle _____ b. Shortest side

Biggest Angle _____ c. middle side

Makes sense!!!!

3.

What is the area of the largest square in the diagram?



F 5 units^2

G 9 units^2

H 16 units^2

J 25 units^2

This is a 3, 4 5 right triangle.

It is a special right triangle. If the two legs are 3 and 4 or multiples thereof, the hypotenuse must be 5 or a multiple of 5.

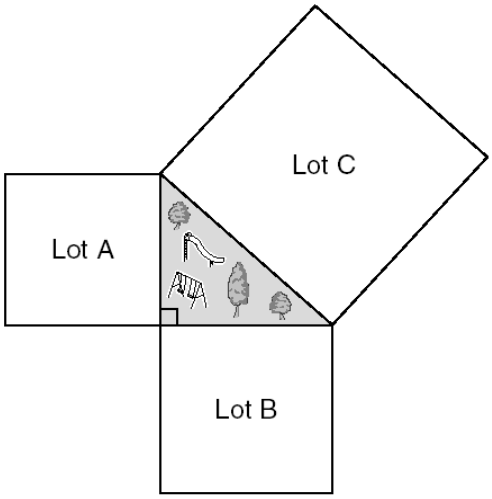
They want to know the area of the big square.

Be careful, they don't want the length of the side. Is the area 5 or 25?_____

No matter what, the TAKS writers love Right Triangles because you can use the **Pythagorean Theorem** on them!! (Pythagorean Theorem = PT)

4.

The drawing below shows 3 square parking lots that enclose a grassy area shaped like a right triangle.



If Lot A's perimeter is 300 yards and Lot B's perimeter is 400 yards, what is the perimeter of Lot C?

A 500 yd

B 700 yd

C 1400 yd

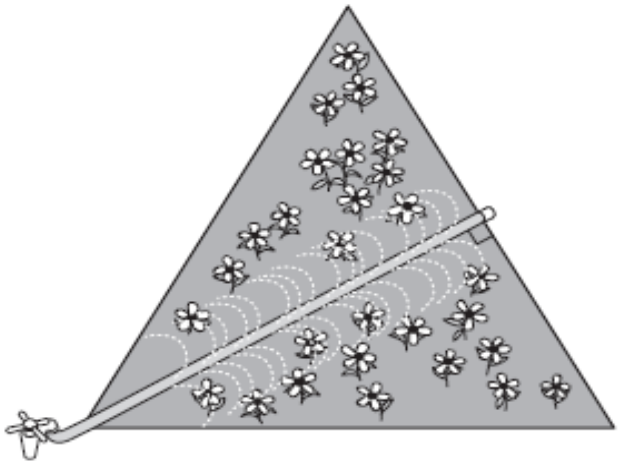
D 2000 yd

3,4,5 it always works
300, 400, _____

If you get a problem like this and it is not 3,4,5, divide the perimeters a and b by 4 to get one side, then square them add them and take the square root of the answer

5.

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

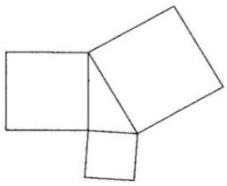
B 9.5 ft

C 6.4 ft

D 5.5 ft

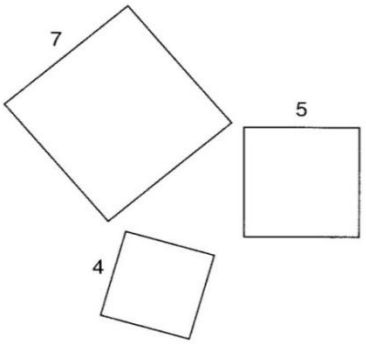
6.

The drawing shows how three squares can be joined to form a triangle.

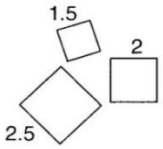


Which set of squares could form a right triangle?

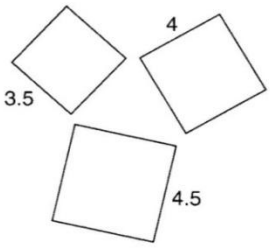
A



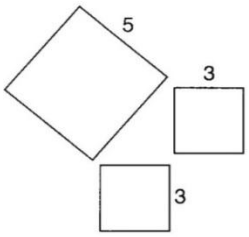
C



B



D

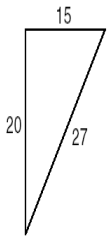


Solve each one. See which one makes the PT true. Remember! The hypotenuse is always the longest of the three sides. Also, are any of them multiples of 3, 4,5?

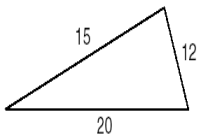
7.

Use the Pythagorean theorem to find the figure that is a right triangle.

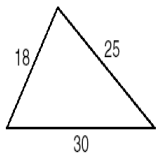
F



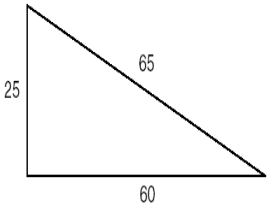
H



G

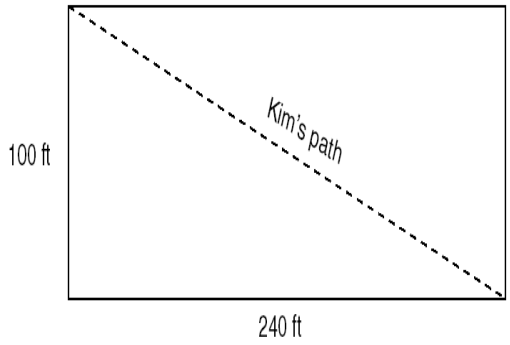


J



8.

Kim walked diagonally across a rectangular field that measured 100 feet by 240 feet.



Which expression could be used to determine how far Kim walked?

A $2(100 + 240)$

B $\sqrt{100} + \sqrt{240}$

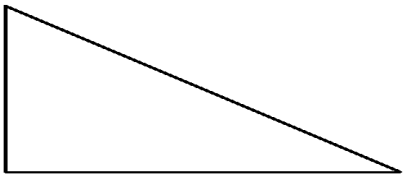
C $\frac{100 \times 240}{2}$

D $\sqrt{(100^2) + (240^2)}$

If you don't see the answer, plug in the numbers. You are cooking for "c"
Find c using the PT. Then see which answer gives you "c" when you plug in a and b.

9.

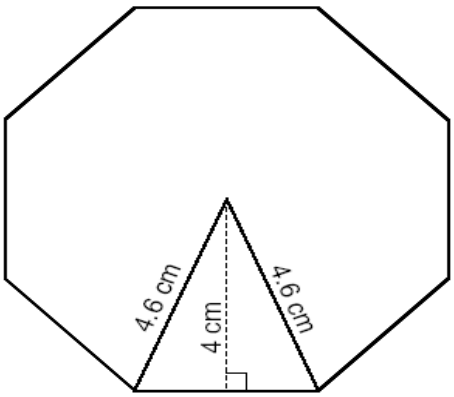
Look at the right triangle shown below. Which of the following could be the triangle's dimensions?



F 12, 16.8, 18.2
G 5.4, 10.6, 16
H 1.2, 1.6, 2
J 8, 10, 12.5

10.

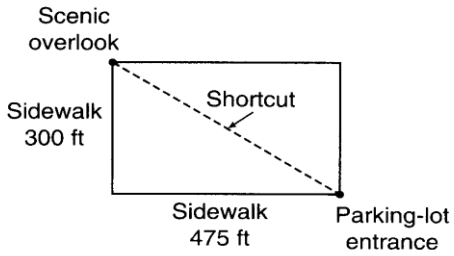
What is the perimeter to the nearest centimeter of the regular octagon drawn below?



F 41 cm
G 36 cm
H 27 cm
J 18 cm

11.

Jillian walks from the parking-lot entrance of a park to the scenic overlook by following a sidewalk along the edge of the park. She walks back to the parking lot by taking a shortcut through the park. The drawing below shows her journey.



To the nearest foot, how much shorter was her trip back to the parking lot than her walk to the scenic overlook?

A 417 ft
B 213 ft
C 562 ft
D 261 ft

Edge walk _____+_____ = _____ ft
Back is the diagonal of a right triangle

$$a^2 + b^2 = c^2$$

_____^{2} + _____^{2} = c^2

_____= c^2

How much shorter is C than the edge?_____

12.

A square park has a diagonal walkway from 1 corner to another. If the walkway is about 38 yards long, what is the approximate length of each side of the park?

F 6 yd
G 19 yd
H 27 yd
J 54 yd

13.

Megan is using an equilateral triangle as part of a design on a sweatshirt. Each side of the triangle is 12 inches long. Megan is sewing a line of sequins from the midpoint of one side of this triangle to the opposite vertex. Approximately how long will the line of sequins be?

A 13.4 in.
B 10.4 in.
C 8.5 in.
D 5.2 in.

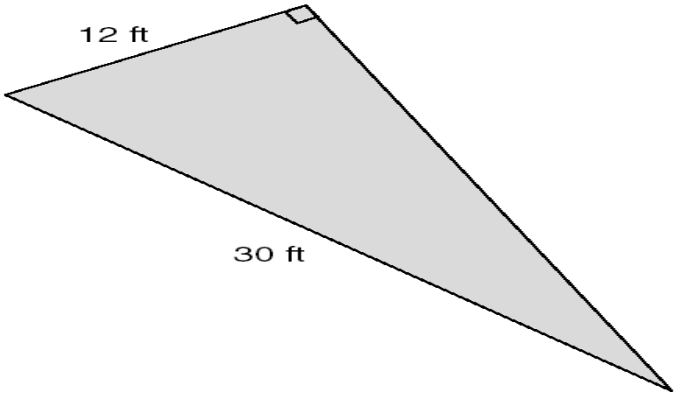
Let's draw it and see what happens:
Equilateral = all sides the same

$$a^2 + b^2 = c^2$$

$6^2 + 12^2 = c^2$
C^2 = _____
C = _____

14.

Mrs. Cheung hired a landscaping service to plant a row of bushes around her triangular backyard.



If the bushes must be planted 3 feet apart, approximately how many bushes are needed for Mrs. Cheung's backyard?

A 23

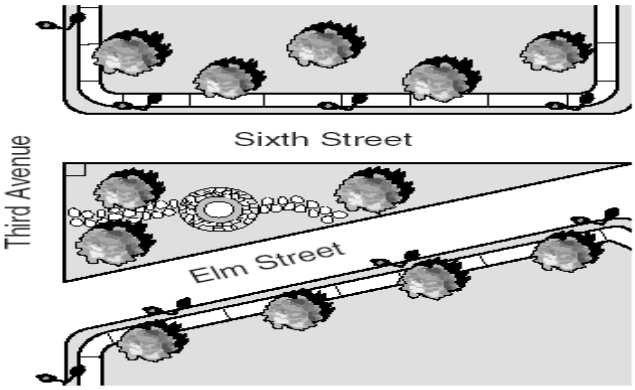
B 25

C 28

D 32

Hint: Find the perimeter using the PT and divide by 3. Show work

15.



In a town, there is a small garden shaped like a triangle, as shown below. The side of the garden that faces Sixth Street is 80 feet in length. The side of the garden that faces Third Avenue is 30 feet in length.

What is the approximate length of the side of the garden that faces Elm Street?

F 35 ft

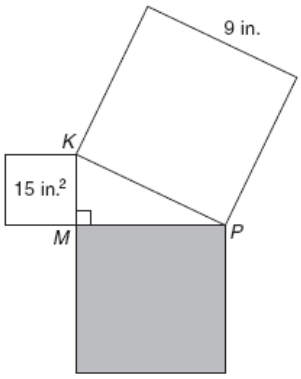
G 40 ft

H 85 ft

J 110 ft

16.

Look at the drawing shown below.



If ΔKMP is a right triangle formed by the placement of 3 squares, what is the area of the shaded square?

A 135 in.²

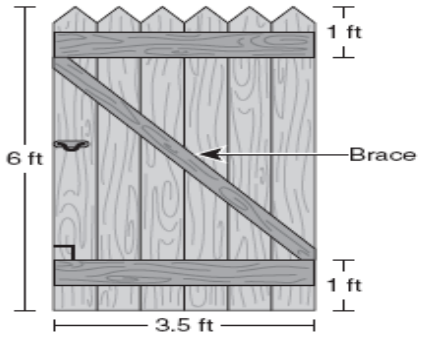
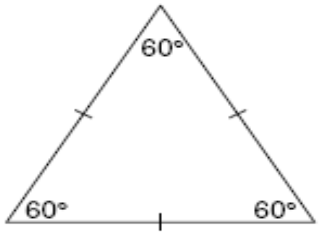
B 24 in.²

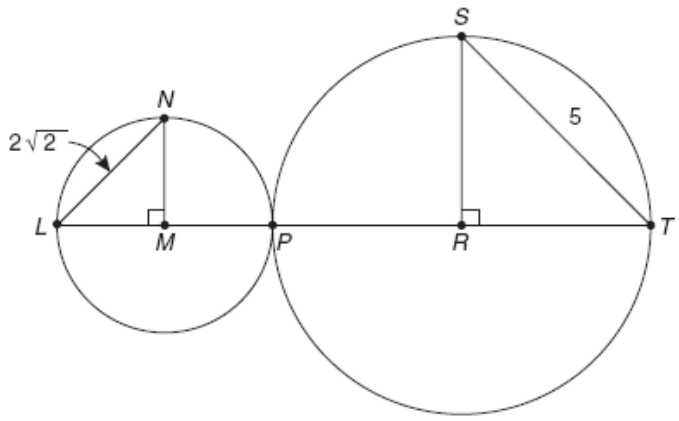
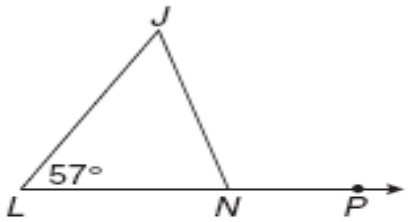
C 66 in.²

D 81 in.²

This was on the last benchmark…How did you do?

Show work

17. Mr. Carpenter built a wooden gate, as shown below.  Which is closest to the length in feet of the diagonal board that Mr. Carpenter used to brace the wooden gate? **A** 4.9 ft **B** 5.3 ft **C** 6.1 ft **D** 6.9 ft	Outline the right triangle that you will use to determine the diagonal. The show how you got the dimensions for a and b. Solve and show work
18. 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.	CLASS DEMO This is a hard one! Take careful notes!

19. In the figure below, circle M and circle R intersect at point P.  Which is closest to the length of $\overline{LT}$? **F** 14 units **G** 11 units **H** 18 units **J** 16 units	1: Which special right triangle has x times the sq root of 2 for the hypotenuse? So, how long are the sides a and b_____ So, LP is how long?_____ 2: Same thing here. We know that x times the sq root of 2 = 5. Find x. How long is PT?_____ How long is LT?_____
20. Look at the diagram below.  Which of the following relationships must be true? **F** $m\angle JNP + m\angle JNL + 57° = 180°$ **G** $m\angle NJL + 57° = m\angle JNP$ **H** $m\angle JNP = 57°$ **J** $m\angle JNL + 57° = m\angle JNP$	CLASS DEMO:
21. Flash back: Solve for "y" $3x + 6y = 18$ What is the slope and what is the y intercept? y =_____ m =_____ b=_____	

22.

What is the rate of change of the function $y = -7$?

F 7
G −7
H 0
J Undefined

23.

A 30, 60, 90 right triangle has a hypotenuse of 4. What are its three sides?

24.

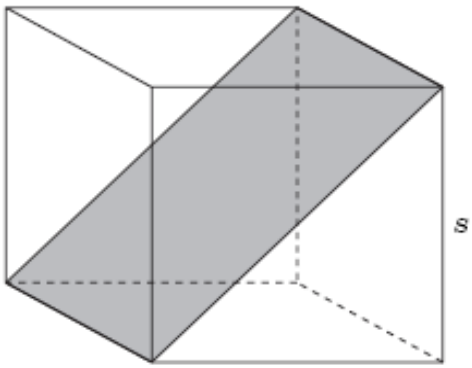
In a 30, 60, 90 right triangle, the shortest side is 5. What are its three sides?

25.

In a 45, 45, 90 right triangle, the hypotenuse is 12. What are the other two sides (round to hundredths place).

26.

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 $A = s^2\sqrt{2}$

CLASS DEMO

Cube: sides are _____ label the parts of the shades area that are "s".

How do you find the length of the other sides? PT?