Math Modeling Geometry on TAKS _____NAME _____CLASS

24) If $\measuredangle A$ and $\measuredangle B$ are complementary angles and $m\measuredangle A$ is x, which equation can be used to find y, $m\measuredangle B$?

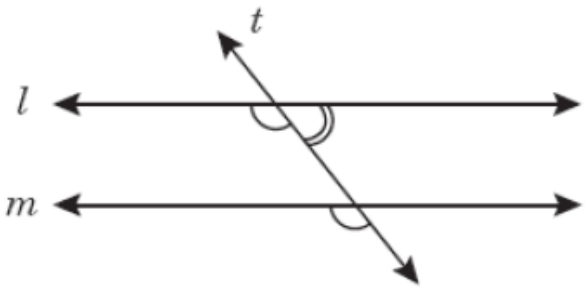
F $y = 90 + x$
G $y = 90 - x$
H $y = 180 - x$
J $y = x + 180$

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

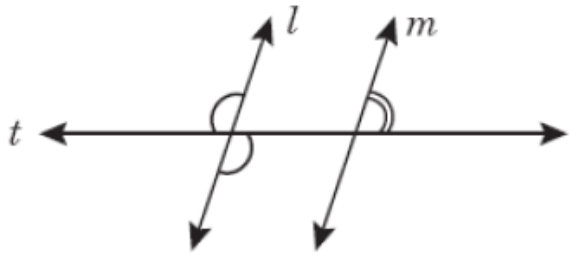
A $m\angle BCA = 180° - [(6x + 3)° - (3x - 6)°]$
B $m\angle BCA = 180° - [(6x + 3)° + (3x - 6)°]$
C $m\angle BCA = 180° + (6x + 3)° - (3x - 6)°$
D $m\angle BCA = 180° + (6x + 3)° + (3x - 6)°$

18) Which of the following does not necessarily represent line l parallel to line m and intersected by line t?

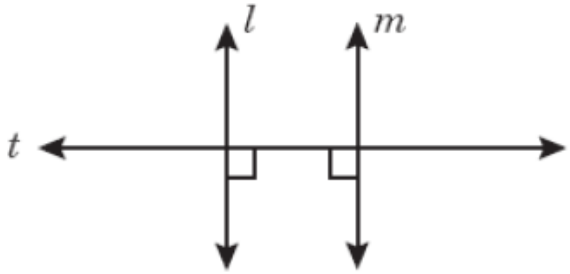
A



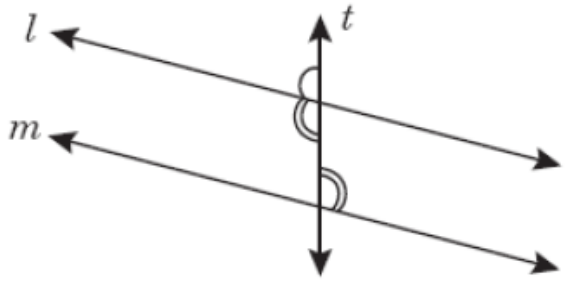
C



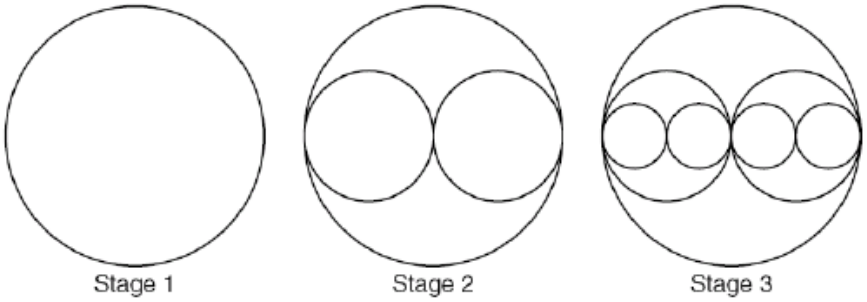
B



D



34) The figure below shows the first 3 stages of a fractal.



How many circles will the nth stage of this fractal contain?

F $2n$
G 2^n
H $2n - 1$
J $2^n - 1$

19) If a circle were divided into 4, 6, or 9 equal sectors, which of the following shows the respective measures of the central angles of the sectors?

A 90°, 60°, 40°
B 45°, 30°, 20°
C 90°, 60°, 45°
D 180°, 90°, 60°

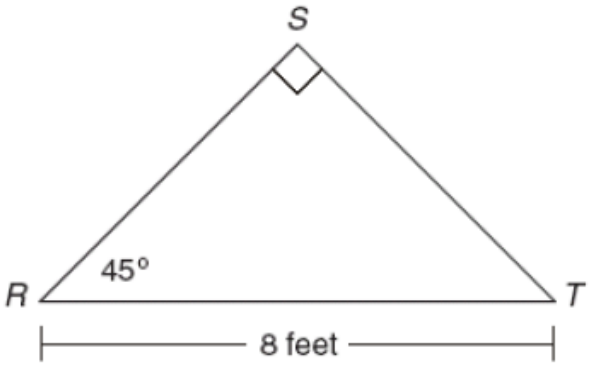
23) Start with a 1-unit-by-1-unit unshaded square. In each iteration, the following steps occur for the smallest unshaded squares resulting from the previous iteration.

Step 1: Divide the square into a 3-by-3 grid of squares
Step 2: Shade only the center square of this 3-by-3 grid

What fraction of the 1-unit-by-1-unit square is shaded after the second iteration?

A $\frac{4}{9}$
B $\frac{7}{9}$
C $\frac{17}{81}$
D $\frac{64}{73}$

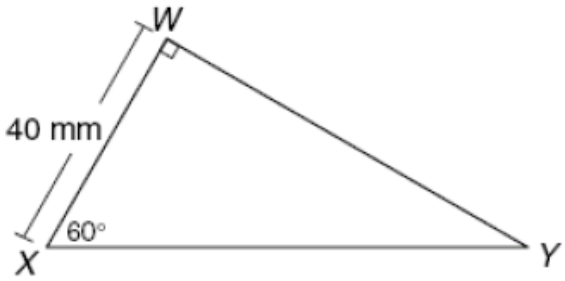
7) Find the area of triangle *RST*.



A 16 ft^2
B 32 ft^2
C 24 ft^2
D 40 ft^2

17) ΔWXY is a right triangle.

Find the length of $\overline{WY}$.

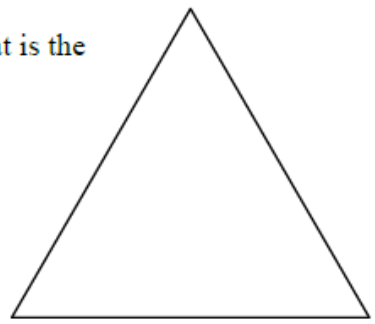


A 20 mm
B $20\sqrt{3}$ mm
C 60 mm
D $40\sqrt{3}$ mm

38) In ΔPKN, $PN = 14$ inches, $m\angle N = 30°$, and $m\angle K = 90°$. Which is closest to the perimeter of ΔPKN?

F 42 in.
G 33 in.
H 31 in.
J 28 in.

2006 Summer Exit
46) If the perimeter of the equilateral triangle shown below is 37 centimeters, what is the approximate area of the triangle?

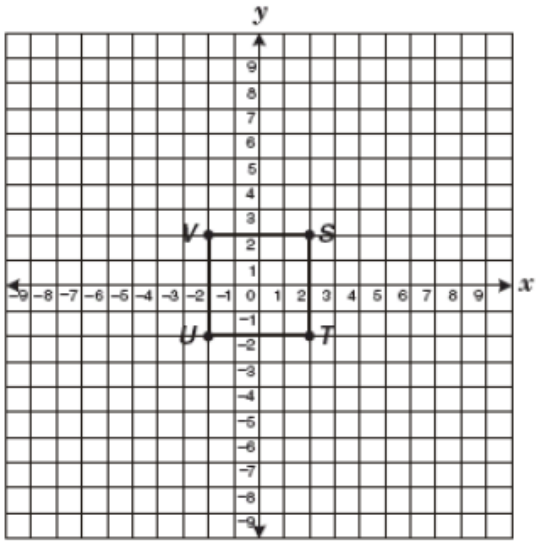


F 132 cm^2
G 54 cm^2
H 33 cm^2
J 66 cm^2

20) ΔKMS has a right angle at M. The measure of $\angle MSK = 60°$, and $KS = 17$ centimeters. Which is closest to the length of $\overline{KM}$?

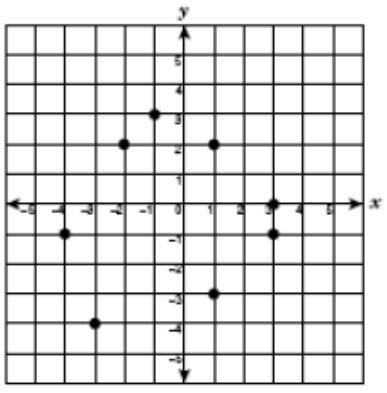
A 9 cm
B 12 cm
C 10 cm
D 15 cm

45) If quadrilateral *STUV* is rotated 180° around the origin, in which quadrant will point *S* appear?



A Quadrant I
B Quadrant II
C Quadrant III
D Quadrant IV

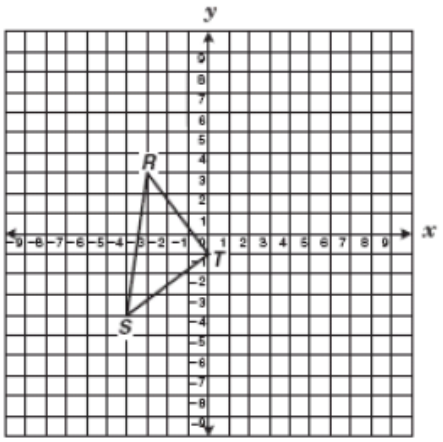
43) Which ordered pairs form the vertices of an isosceles trapezoid?



A (1, 2), (3, −1), (−3, −4), and (−4, −1)
B (1, 2), (3, −1), (−4, −1), and (−2, 2)
C (−1, 3), (3, −1), (−2, 2), and (−4, −1)
D (−1, 3), (−4, −1), (−2, 2), and (3, 0)

40) ΔRST is a right triangle.

If the equation of the line containing $\overline{ST}$ is $y = \frac{3}{4}x - 1$, which of the following best represents the equation of the line containing $\overline{RT}$?



F $y = \frac{4}{3}x - 1$

G $y = -\frac{4}{3}x - 1$

H $y = -\frac{3}{4}x - 1$

J $y = \frac{3}{4}x - 1$

34) $\overline{AB}$ is the diameter of circle C. If the endpoints of the diameter are $(3, -4)$ and $(7, 2)$, what are the coordinates of the center of circle C?

F $(2, -1)$
G $(4, -2)$
H $(5, -1)$
J $(10, -2)$

16) Find the midpoint of the line segment with endpoints $(4, -6.25)$ and $(-15, 12.25)$.

F $(-5.5, 3)$
G $(-9.5, 9.25)$
H $(-11, 6)$
J $(-19, 18.5)$

25) ΔABC has vertices at $A(0, 0)$, $B(9, 12)$, and $C(25, 0)$. What is the distance between the midpoint of $\overline{AB}$ and the midpoint of $\overline{AC}$?

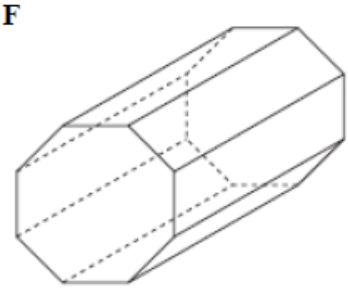
A 7.5 units
B 10 units
C 15 units
D 20 units

24) Which two 3-dimensional figures have the same number of faces?

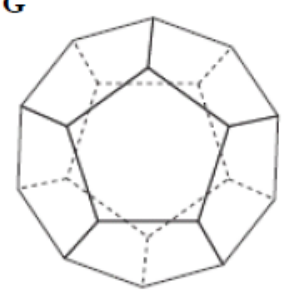
F A triangular prism and a square pyramid
G A triangular prism and a rectangular prism
H A triangular pyramid and a square pyramid
J A triangular pyramid and a rectangular prism

10) Which of these 3-dimensional figures has the following characteristics: 12 faces, 8 vertices, and 18 edges?

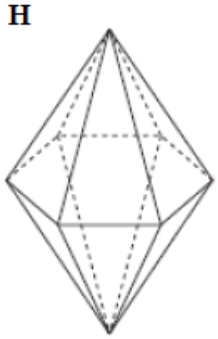
F



G



H



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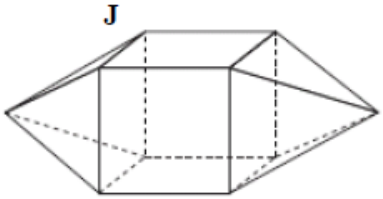
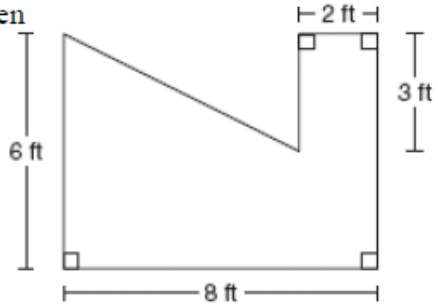


44) The figure below shows the dimensions of a section of Mr. Green's garden that he will use for planting flowers.

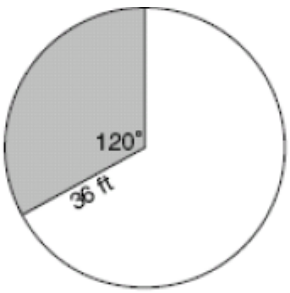
What is the area of Mr. Green's garden that he will use for planting flowers?



F 42 ft^2
G 30 ft^2
H 39 ft^2
J 24 ft^2

4) The shaded area in the circle below represents the section of a park used by the chamber of commerce for a fund-raising event.

What is the approximate area of the section of the park used for the fund-raiser?

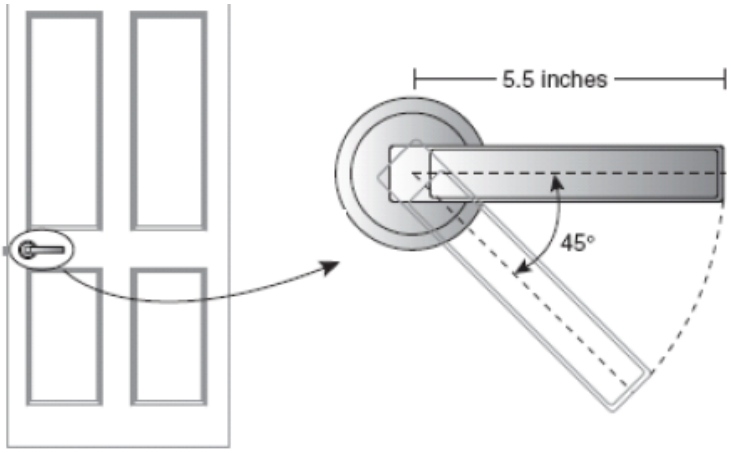


F 339 square feet
G 1,357 square feet
H 4,071 square feet
J 12,214 square feet

45) Look at the diagram below.

When the door handle is pushed down to open the door, it makes a 45° angle with its former position. What is the approximate arc length of the path traveled by the outside end of the door handle when the handle is pushed down?

A 34.56 in.
B 11.88 in.
C 4.32 in.
D 2.16 in.



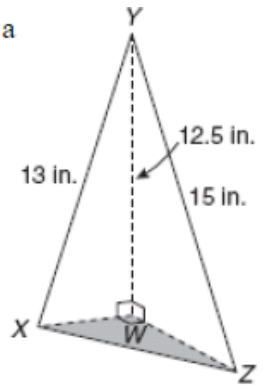
51) About how many feet of fencing are needed to enclose a rectangular garden with a 30-foot-long side and a 40-foot-long diagonal?

A 113 ft
B 133 ft
C 140 ft
D 160 ft

40) The figure below shows three right triangles joined at their right-angle vertices to form a triangular pyramid.

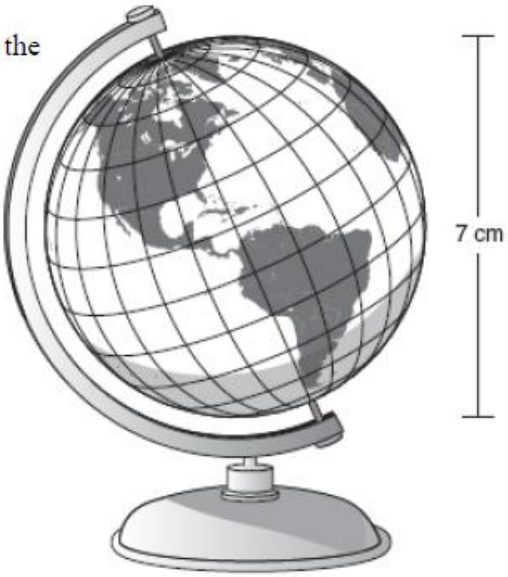
Which of the following is closest to the length of $\overline{XZ}$?

F 7 inches
G 20 inches
H 12 inches
J 9 inches



2005 October Exit

41) Mr. Martínez bought a solid-glass globe with a stand, as shown in the diagram below.

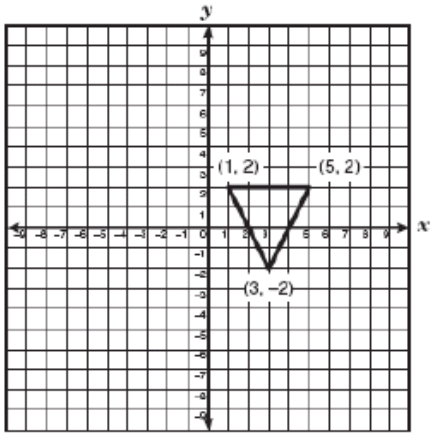


If the diameter of the globe is 7 centimeters, which is closest to the volume of glass in the globe?

A 51 cm^3
B 180 cm^3
C 154 cm^3
D 101 cm^3

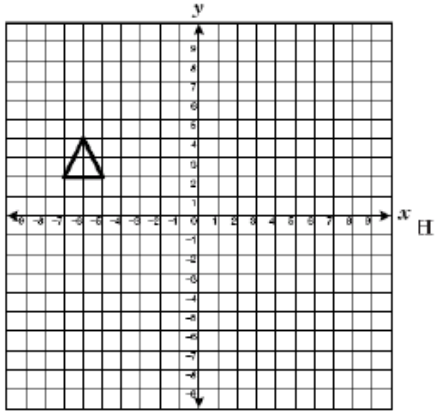
2003 Exit

32) A triangle with vertices (1, 2), (5, 2), and (3, −2) is shown to the right.

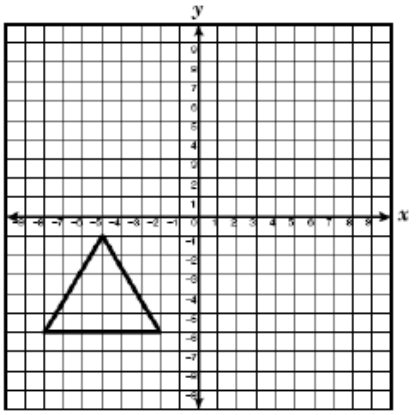


Which triangle below is similar to the figure above?

F



H



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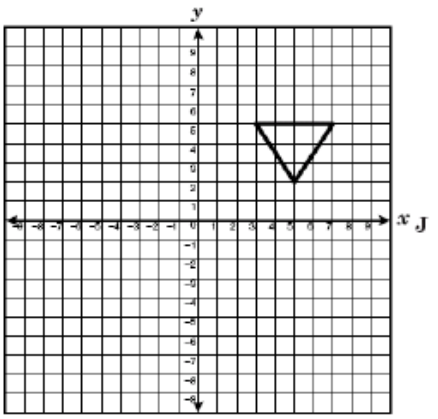

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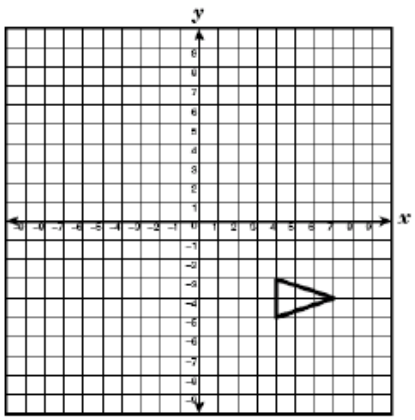
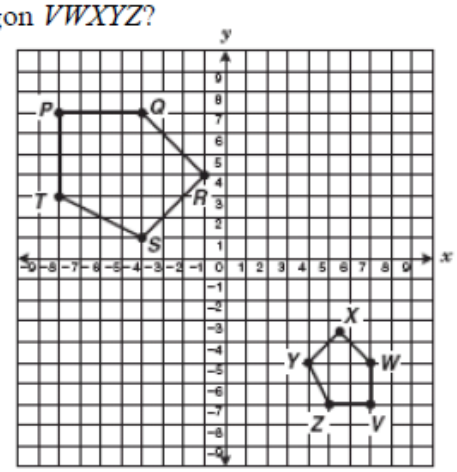


9) Which statement best describes why pentagon *PQRST* is similar to pentagon *VWXYZ*?



A The ratio of the length of $\overline{PT}$ to $\overline{YZ}$ equals the ratio of the length of $\overline{RS}$ to $\overline{WV}$.

B Both pentagons have corresponding right angles.

C Pentagon *VWXYZ* is the result of a translation of pentagon *PQRST*.

D The ratio of the corresponding sides of pentagons *PQRST* and *VWXYZ* is 2:1.