ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

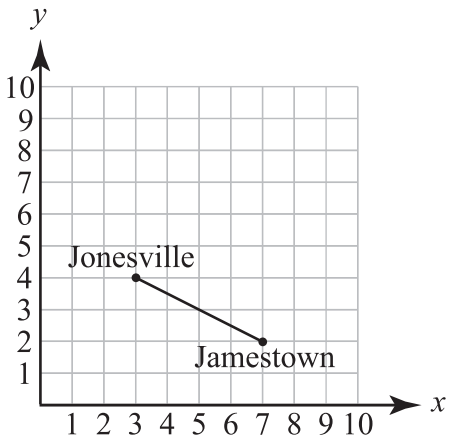
Geometry
Mid-Year End-of-Course Examination

January 2008 Administration

Arkansas Department of Education

PART II Released Geometry Items

1. The coordinate grid below shows the locations of Jonesville and Jamestown.



Midland is halfway between Jonesville and Jamestown. What would be the coordinates of Midland if it were marked on this map?

A. (6, 2.5)

B. (4, 3.5)

* C. (5, 3)

D. (2, 2)

2. The statements below are true about the three types of inhabitants, X, Y, and Z, of a fictional planet named Mathos.

- All Xs are Ys.
- All Zs are Xs.

Based on this information, which statement must be true?

A. All Ys are Xs.

* B. All Zs are Ys.

C. All Xs are Zs.

D. All Ys are Zs.

3. Michelle measured the distance around the center of her basketball to be equal to 10π inches. To the nearest cubic inch, what is the volume of her ball? Use $\pi = 3.14$.

A. 287 cubic inches

* B. 523 cubic inches

C. 707 cubic inches

D. 1,146 cubic inches

4. Mr. Wallace has different lengths of scrap lumber that he wants to use to build a triangular support. Which combination of lengths of scrap lumber can Mr. Wallace use to form a triangle?

* A. 2 ft, 3 ft, and 4 ft

B. 3 ft, 4 ft, and 7 ft

C. 5 ft, 9 ft, and 15 ft

D. 6 ft, 8 ft, and 17 ft

5. Allison had a piece of wood that was in the shape of a rectangular pyramid. Using a saw, she cut the piece of wood parallel to the base of the pyramid. What shape is the cross section of the pyramid?

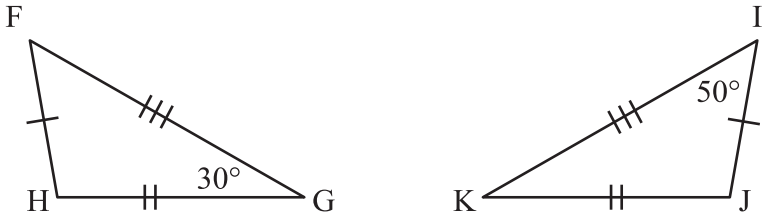
A. triangle

B. rhombus

C. pentagon

* D. rectangle

6. In the figure below, $\Delta FGH \cong \Delta IKJ$.



What is the measure of $\angle IJK$?

A. 10°

B. 30°

* C. 100°

D. 130°

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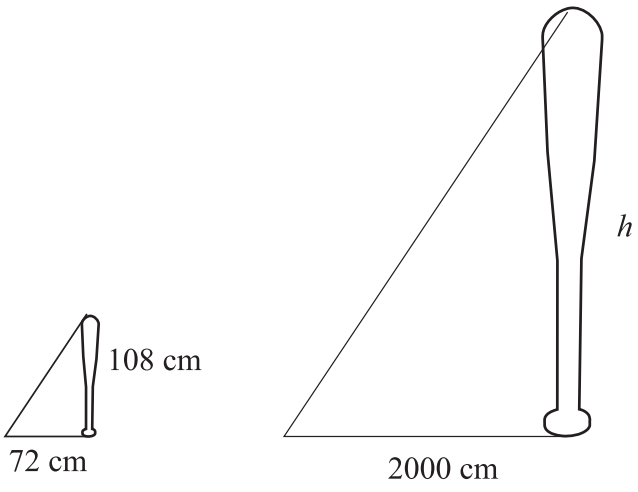
7. Edward wants to determine the height of a sculpture in Chicago called *Batcolumn*, which depicts a giant baseball bat. He measures the length of the shadow of the sculpture to be 2000 cm. Standing at the end of this shadow, he places a 108-cm long baseball bat vertically with one end on the ground. If the length of the shadow of the bat is 72 cm, what is the height, *h*, of the sculpture?



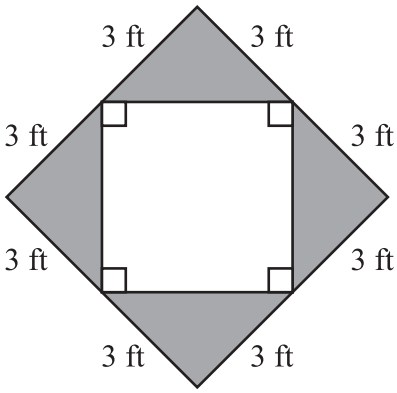
A. 1333.33 cm

B. 1381.33 cm

* C. 3000.00 cm

D. 3108.00 cm

8. At the Spring Fair, a game involves tossing a ball onto a square board bordered with wooden rails, as shown below. If the ball lands in one of the shaded areas, the person wins a prize.



Assuming the ball has an equal chance of landing anywhere in the area, what is the probability that a person playing the game wins a prize?

A. 9%

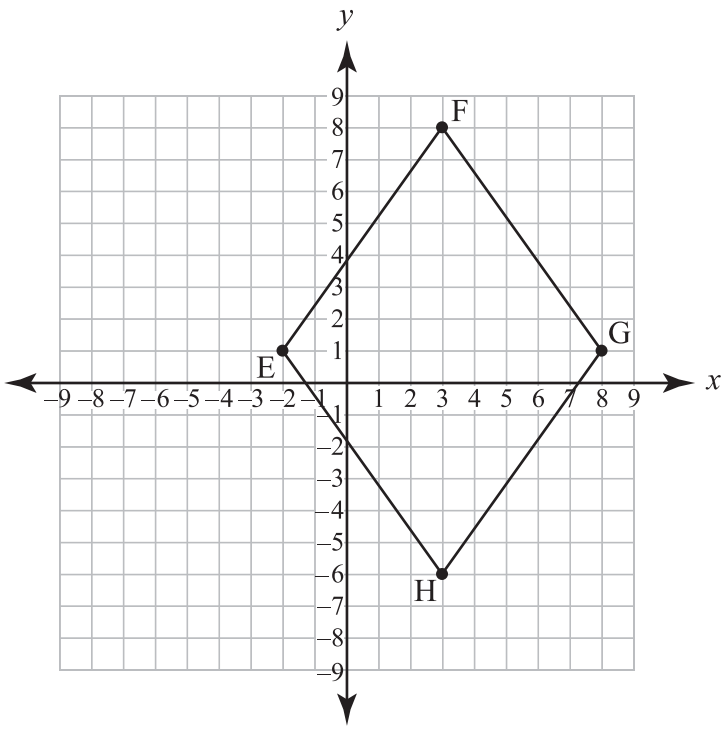
B. 25%

C. 36%

* D. 50%

PART II Released Geometry Items

9. Which is the **most** specific name for quadrilateral EFGH below?



A. square

* B. rhombus

C. rectangle

D. parallelogram

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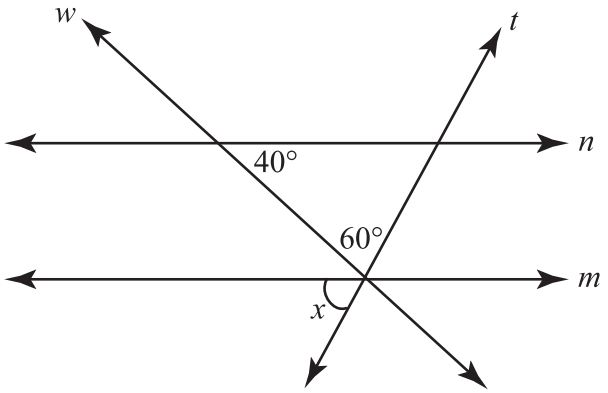
10. If $m \parallel n$, what is the value of x?



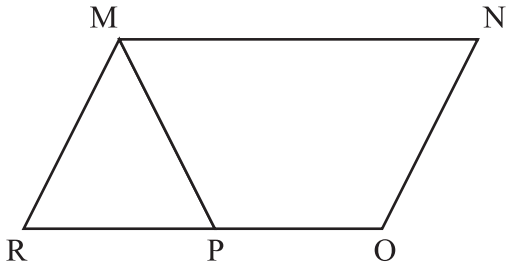
A. 40°

B. 60°

* C. 80°

D. 100°

11. Figure MNOP is an isosceles trapezoid, and figure MNOR is a parallelogram.



If m∠MPR = 62 degrees, what is m∠RMP?

* A. 56°

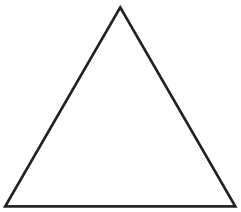
B. 62°

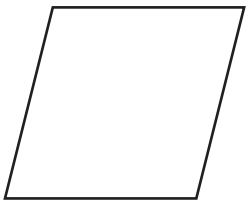
C. 118°

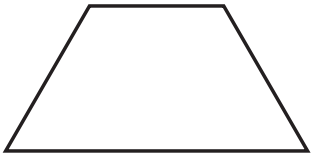
D. 136°

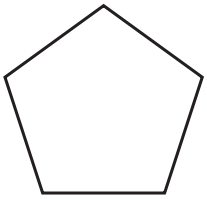
PART II Released Geometry Items

12. Which shape will **not** tessellate?

A. 

B. 

C. 

* D. 

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13. Robbie is looking at a map of cities in his state. He compares the populations of the cities as given below.

- Redville is larger in population than Carroltown.
- Marksville is smaller in population than Redville.
- Greensboro is smaller in population than Marksville.
- Greensboro is larger in population than Carroltown.

Which shows the **correct** order of the cities, when ordering them by population from largest to smallest?

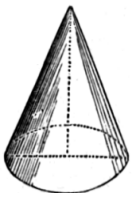
A. Redville, Carroltown, Marksville, Greensboro

B. Redville, Greensboro, Marksville, Carroltown

C. Redville, Marksville, Carroltown, Greensboro

* D. Redville, Marksville, Greensboro, Carroltown

14. The figure below shows a cone with a 1-inch radius and a height of 2 inches.



A new cone is constructed with a radius measuring 3 times the radius of the original cone, and a height measuring 3 times the height of the original cone. What is the ratio of the volume of the second cone to the volume of the original cone?

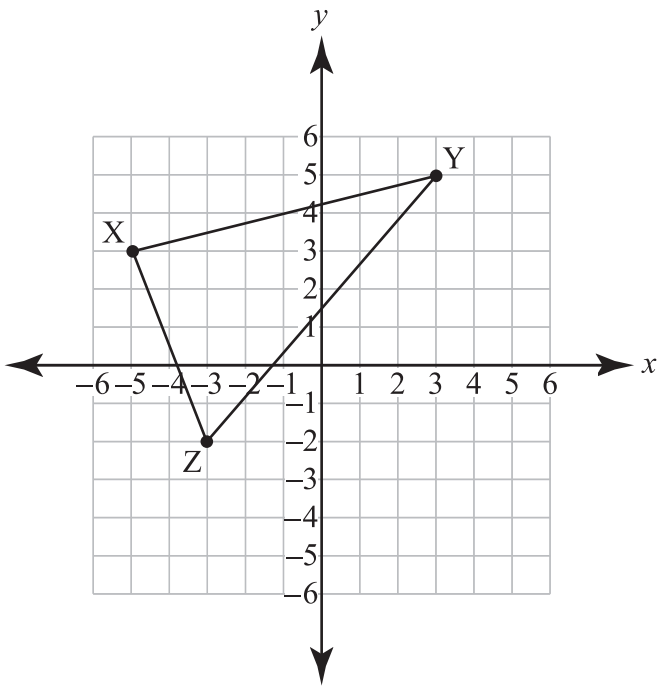
* A. 27 to1

B. 9 to1

C. 6 to1

D. 3 to1

15. The figure below is translated 3 units to the right, then 5 units down, and finally reflected over the *x*-axis.



What are the coordinates of the image of point X after the transformations?

A. (–2, –2)

* B. (–2, 2)

C. (2, –2)

D. (2, 2)

16. Which equation will graph a line that is perpendicular to $y = \frac{3}{5}x - 7$?

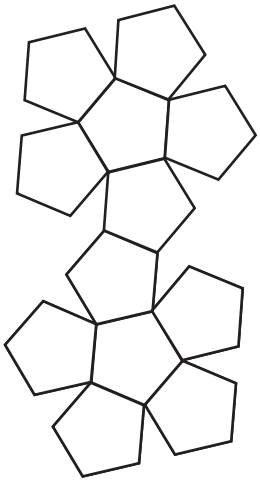
* A. $y = -\frac{5}{3}x + 7$

B. $y = -\frac{3}{5}x - 7$

C. $y = \frac{3}{5}x + \frac{1}{7}$

D. $y = \frac{5}{3}x - 7$

17. Which Platonic solid can be made from the net below?



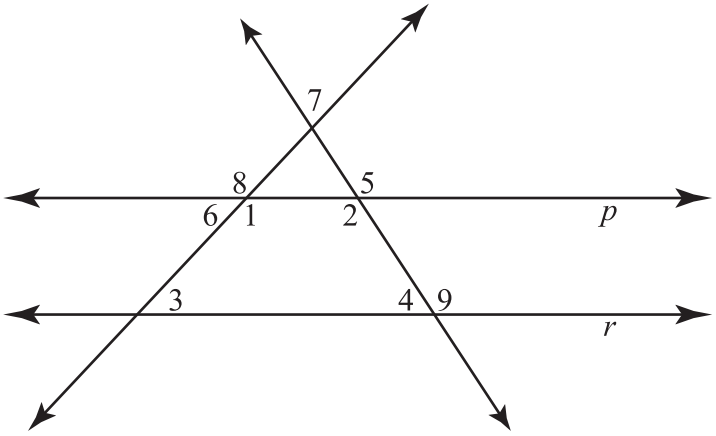
A. octahedron

B. hexahedron

C. icosahedron

* D. dodecahedron

18. In the figure below, $p \parallel r$.



Which must be supplementary angles?

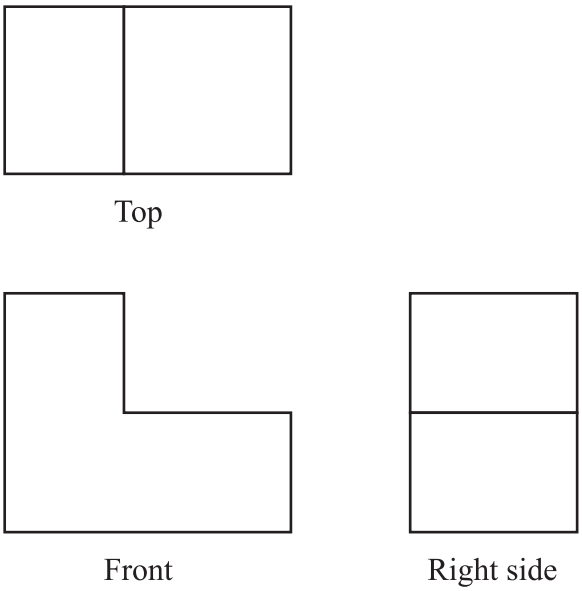
A. ∠2 and ∠5

B. ∠2 and ∠7

* C. ∠4 and ∠5

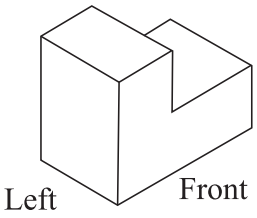
D. ∠3 and ∠4

19. Below is an orthographic drawing of a figure.

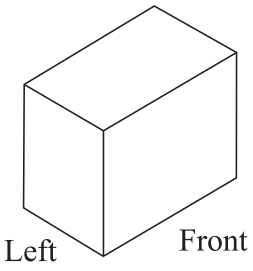


Which is the **correct** isometric drawing of the figure above?

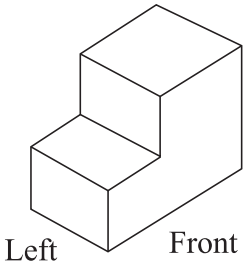
* A.



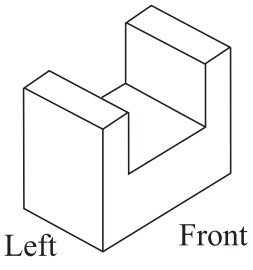
B.



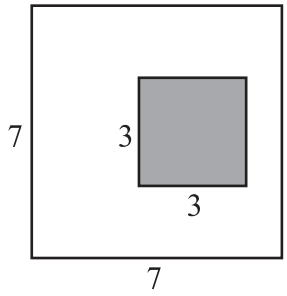
C.



D.



20. A computer program is written to randomly generate points in the larger square in the figure below.



What is the probability that a point chosen randomly by the computer will be in the shaded region?

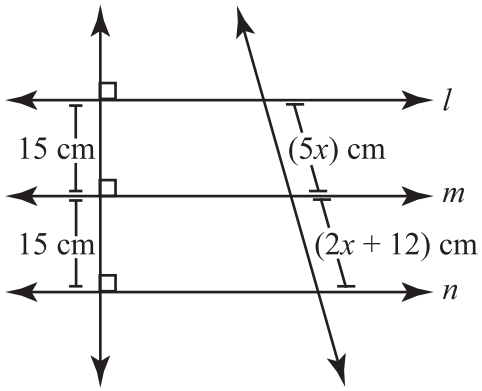
A. $\frac{3}{7}$

B. $\frac{9}{40}$

* C. $\frac{9}{49}$

D. $\frac{9}{58}$

21. What is the value of x in the figure below?



A. 3 cm

* B. 4 cm

C. 5 cm

D. 6 cm

22. A circle with a diameter of 18 units has its center point 5 units to the right and 2 units up from the origin. Which is an equation of the circle in standard form?

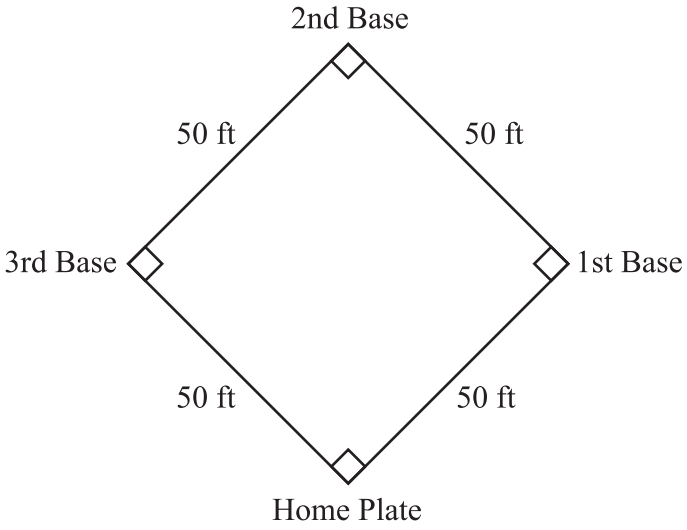
* A. $(x-5)^2 + (y-2)^2 = 81$

B. $(x-2)^2 + (y-5)^2 = 81$

C. $(x+5)^2 + (y+2)^2 = 18$

D. $(x-5)^2 + (y-2)^2 = 324$

23. Some kids in the neighborhood use an empty field to play baseball. The field is shown below, with the dimensions they have marked.



What is the distance, to the nearest tenth of a foot, between home plate and 2nd base?

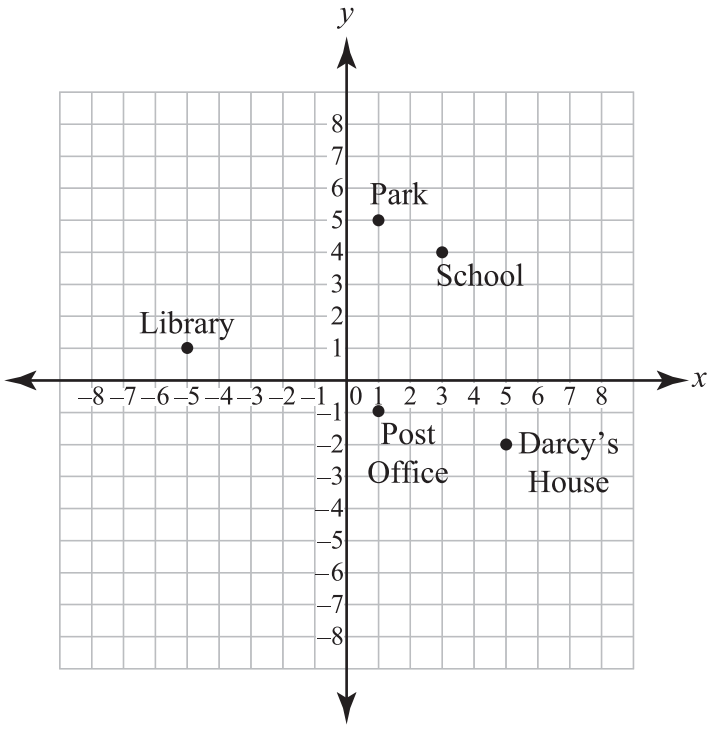
A. 35.4 ft

* B. 70.7 ft

C. 86.6 ft

D. 100.0 ft

24. Darcy used a coordinate grid, shown below, to sketch the locations of some important buildings in her town. Each block represents 1 square mile.



If Darcy could travel in a straight line from her house to school, how many miles would she travel?

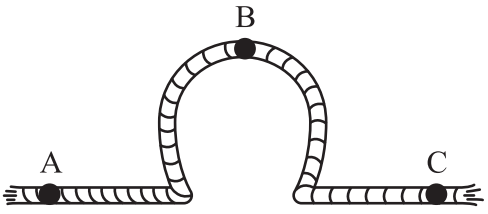
A. 5.1 miles

* B. 6.3 miles

C. 8.2 miles

D. 9.1 miles

25. A rope is used to make the shape below.



Which would contain the points A, B, and C?

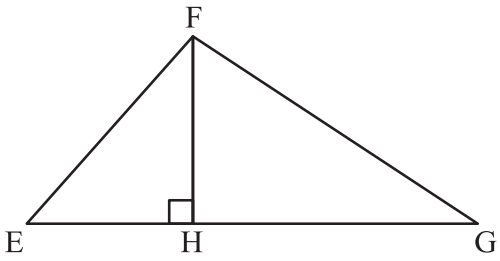
A. transversal

B. segment

C. secant

* D. plane

26. What does segment FH represent in ΔEFG?



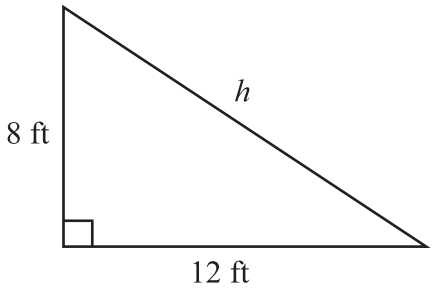
* A. altitude

B. median

C. midsegment

D. perpendicular bisector

27. Starting from the same location, Paul walks 8 feet to the north, while Amy walks 12 feet to the east.



What is the distance, *h,* between Paul and Amy, rounded to the nearest hundredth?

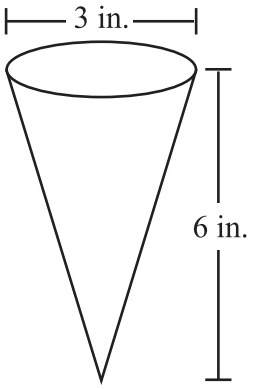
A. 9.79 ft

* B. 14.42 ft

C. 14.49 ft

D. 20.00 ft

28. Jamie went to get some ice cream with her friends at the local creamery. She bought an ice-cream cone with a height of 6 inches and diameter of 3 inches, as shown in the figure below.



What is the volume of ice cream, to the nearest hundredth of a cubic inch, that will completely fill the cone? Use $\pi = 3.14$.

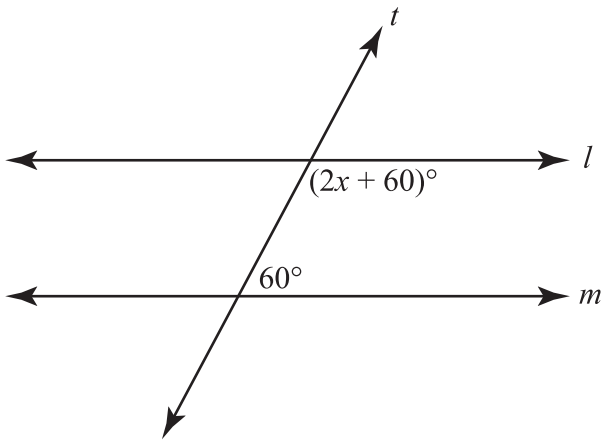
A. 9.42 in.^{3}

* B. 14.13 in.^{3}

C. 18.85 in.^{3}

D. 56.55 in.^{3}

29. What is the value of x that makes $l \parallel m$?



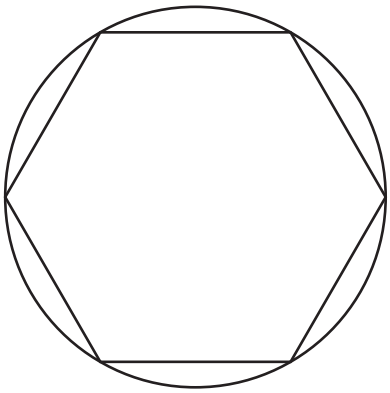
A. 0

B. 15

* C. 30

D. 60

30. The figure below shows a hexagon inscribed inside a circle.



If the diameter of the circle is 16 inches, what is the perimeter of the hexagon?

* A. 48.0 inches

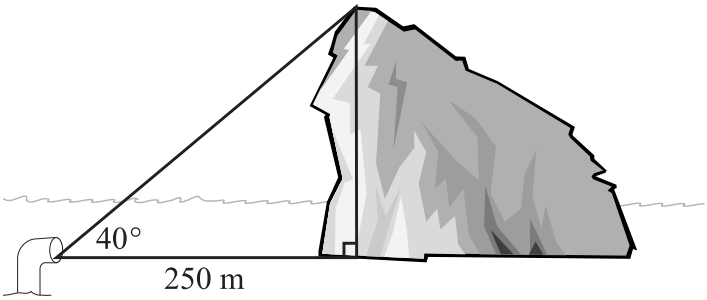
B. 50.24 inches

C. 96.0 inches

D. 166.3 inches

PART II Released Geometry Items

31. The captain of a submarine views an iceberg from his periscope, as shown in the figure below.



What is the height of the iceberg to the nearest meter?

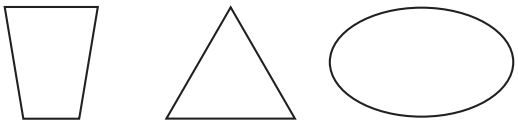
A. 161 m

B. 192 m

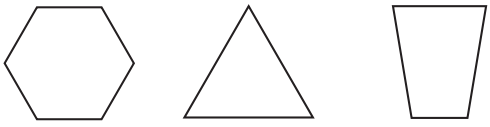
* C. 210 m

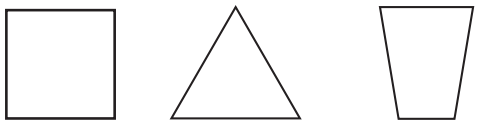
D. 298 m

32. Which set of shapes could be cross sections of a square pyramid?

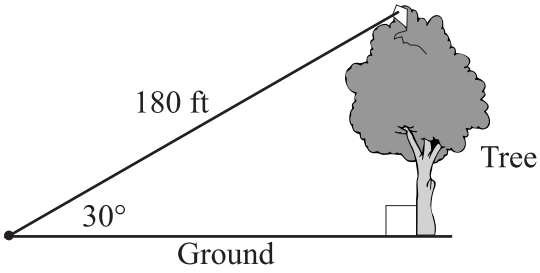
A. 

B. 

C. 

* D. 

33. Charlie has caught his kite in the top of a tree, as shown in the figure below.



He knows that the length of the kite's string is 180 feet, and the angle the string makes with the ground is 30 degrees. How far up the tree is his kite?

* A. 90 ft

B. $90\sqrt{2}$ ft

C. $90\sqrt{3}$ ft

D. 180 ft