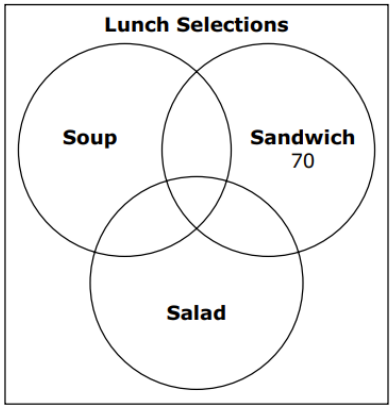
Name _____ **Geometry Test Nav Questions**

1. Which value for x is a counterexample to the following statement?

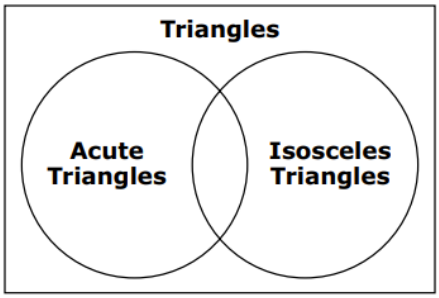
   For all positive values of x, $x^3 \geq x$.

   A. -1.0 B. -0.1 C. 0.1 D. 1.0

2. The Venn diagram represents the combination of lunches that athletes selected.
   • A total of 310 athletes selected a sandwich.
   • A total of 125 athletes selected both a sandwich and a salad.
   • A total of 180 athletes selected both a sandwich and a soup.
   How many athletes selected a sandwich, soup, and a salad?
   F. 5
   G. 55
   H. 65
   J. 110

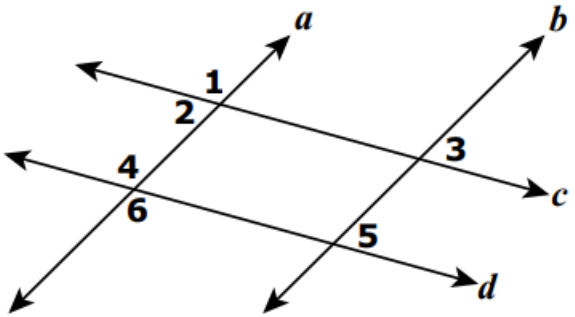


3. Given the Venn diagram:
   Which statement is valid?
   A. All triangles are acute and isosceles.
   B. All triangles are either acute or isosceles.
   C. No triangles are both acute and isosceles.
   D. Some triangles are both acute and isosceles.

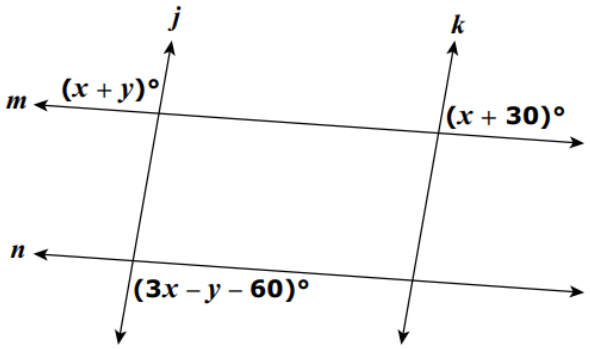


4. Lines *a* and *b* intersect lines *c* and *d*.
   Which of the following statements could be used to prove that *a* || *b* and *c* || *d*?

   F. ∠1 ≅ ∠6, ∠3 ≅ ∠5
   G. ∠1 ≅ ∠6, ∠4 and ∠5 are supplementary
   H. ∠1 ≅ ∠4, ∠1 and ∠2 are supplementary
   J. ∠1 and ∠ 3 are supplementary, and
   ∠1 and ∠ 6 are supplementary



5. Lines j and k are cut by transversals m and n.
(Figure is not drawn to scale.)
Which relationship is sufficient to prove $j \parallel k$?



A. x = 60
B. y = 30
C. y = x – 30
D. y = 150 – 2x

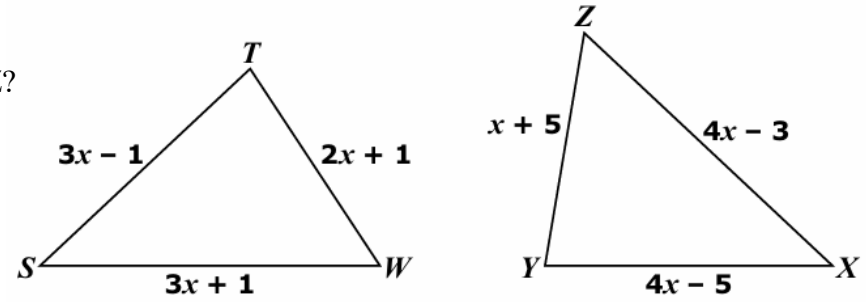
6. The perimeter of ΔJKL is 200 centimeters.

- JK = 68 centimeters
- KL = 62 centimeters

Which statement is true about the interior angles of ΔJKL?

F. $m\angle L$ is the greatest of the interior angles
G. $m\angle L$ is the least of the interior angles
H. $m\angle K$ is the greatest of the interior angles
J. $m\angle K$ is the least of the interior angles

7. Triangle STW and ΔXYZ are shown.
Which value of x makes ΔSTW ≅ ΔXYZ?

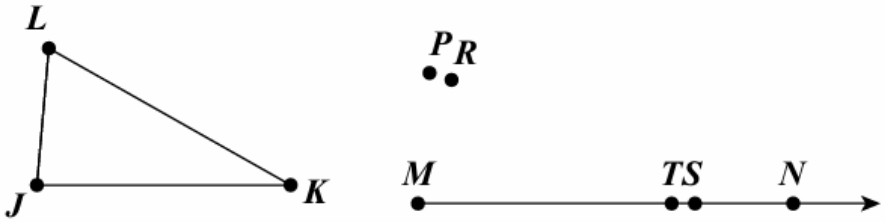


A. 2
B. 3
C. 4
D. 6

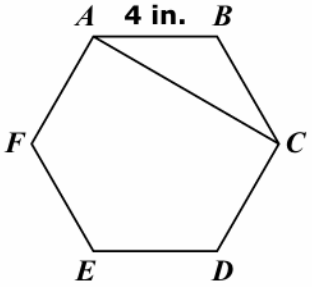
8. Evelyn is constructing a triangle congruent to ΔJKL using $\overleftrightarrow{MN}$

Which triangle should Evelyn construct that will be congruent to ΔJKL?

F. ΔMSP G. ΔMSR H. ΔMTP J. ΔMTR

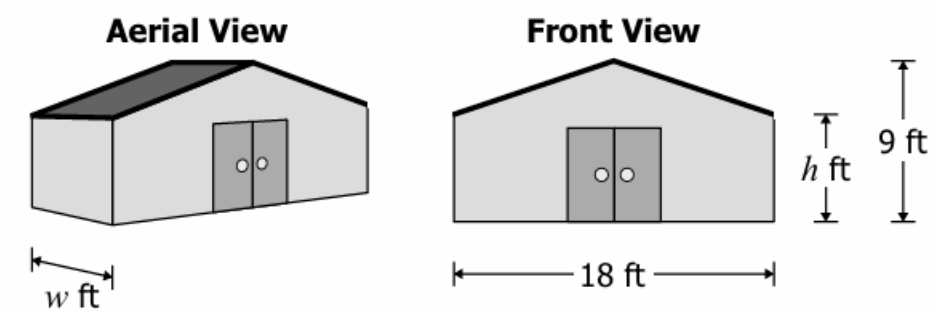


9. The figure shown is a regular hexagon.
Which measure is the length of the diagonal AC?



A. $4\sqrt{3}$ in.
B. 8 in.
C. 12 in.
D. $8\sqrt{3}$ in.

Directions: Use the following information to answer questions 10-12.
A carpenter will build a shed with four walls and a roof. The shape of the shed will consist of a triangular prism and a rectangular prism as shown in the model.



10. A vertical plane intersects the model. The plane is parallel to the front face of the model. What is the shape of this cross section?
F. Triangle G. Pentagon H. Rectangle J. Trapezoid

11. If $w = 12$ and $h = 6$, the surface area of the exterior walls and doors is exactly –
A. 360 square feet B. 414 square feet C. 468 square feet D. 630 square feet

12. If $w = 12$, which equation correctly models a calculation of the volume of the shed?
F. $V = 18(12)(9 - h)$ H. $V = (18)(12)(h) + ½ (9)(12)(9 - h)$
G. $V = 60h + 18(9 - h)$ J. $V = 18(12)(h) + ½ (18)(12)(9 - h)$

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13. A cylinder has a volume of 300π cubic centimeters and a base with a circumference of 10π centimeters. What is the height of the cylinder?
A. 30 cm B. 15 cm C. 12 cm D. 3 cm

14. The height of a rectangular prism is decreased by a factor of $\frac{1}{3}$. The other dimensions are unchanged. Which statement is true?
F. The volume is decreased by a factor of $\frac{1}{3}$. H. The volume is decreased by a factor of $\frac{1}{9}$.
G. The volume is decreased by a factor of $\frac{1}{6}$. J. The volume is decreased by a factor of $\frac{1}{27}$.

15. A company makes two similar cylindrical containers. The total surface area of the smaller container is 0.81 times that of the larger container. The height of the larger container is 60 centimeters. What is the height of the smaller container?
A. 54 cm B. 48.6 cm C. 24.3 cm D. 21 cm

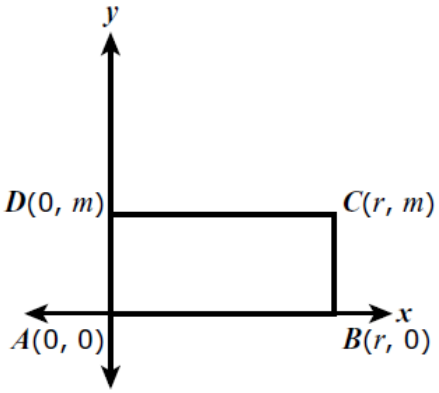
16. Given: Quadrilateral ABCD.
Which expression proves that ABCD is a rectangle?

F. The length of each diagonal is $\sqrt{r^2+m^2}$.

G. The common midpoint of the diagonals is $\left(\frac{r}{2},\frac{m}{2}\right)$.

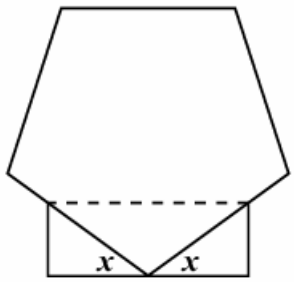
H. The slope of $\overline{AC}$ is $\frac{m}{r}$ and the slope of $\overline{BD}$ is $-\frac{m}{r}$.

J. The length of both $\overline{AB}$ and $\overline{CD}$ is r and the length of both $\overline{AC}$ and $\overline{BC}$ is m.



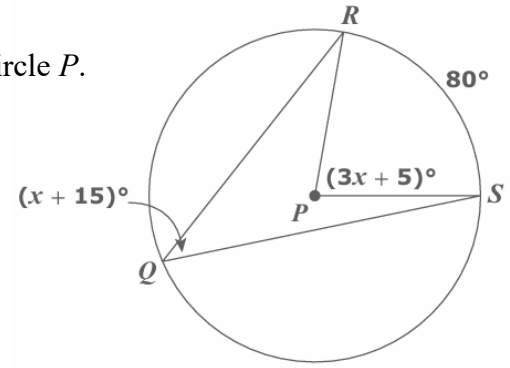
17. The figure shown is composed of a regular pentagon and a rectangle.
What is the measure of each of the angles identified as x?

A. 36°
B. 54°
C. 72°
D. 108°



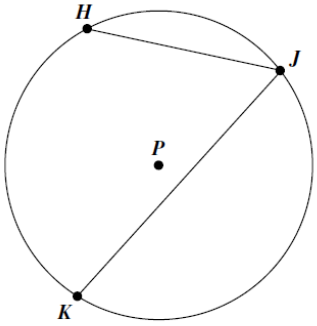
18. Points Q, R, and S lie on circle P.
What is the value of x?

F. 5
G. 12
H. 25
J. 65



19. In circle P, $m\angle HJK = 60°$ and $mJK = 2 \bullet mHJ$.
What is mHJ?

A. 80°
B. 120°
C. 150°
D. 160°

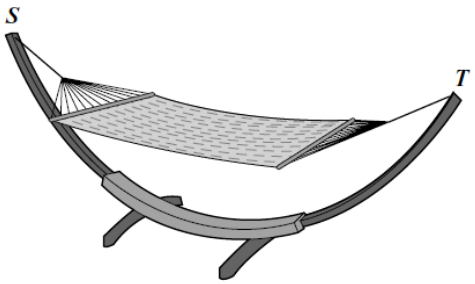


20. Circle P has a radius of 1 unit. A central angle of circle P is 225°.
What is the length of the minor arc?

F. $\frac{5\pi}{4}$ units G. $\frac{3\pi}{4}$ units H. $\frac{5\pi}{8}$ units J. $\frac{3\pi}{8}$ units

21. The design for the arc-shaped stand of the hammock shown was based on a 144° arc, ST, of a circle with a radius of 2.3 meters. (Figure is not drawn to scale.)

The length of ST is closest to –

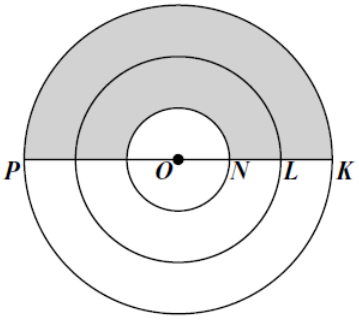


A. 2.89 m
B. 3.68 m
C. 5.78 m
D. 7.23 m

22. Given: Three concentric circles with center O

$\overline{KL} \cong \overline{LN} \cong \overline{NO}$ $KP = 42$ inches

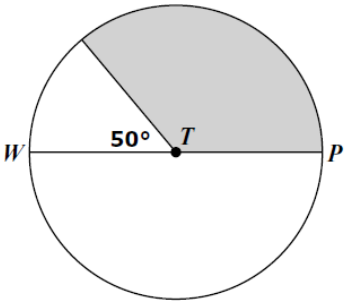
Which is closest to the area of the shaded region?



F. 231 sq in.
G. 308 sq in.
H. 539 sq in.
J. 616 sq in.

23. Given: Circle T with WP = 36 centimeters

Which best represents the area of the shaded sector?



A. 117π cm^2
B. 180π cm^2
C. 234π cm^2
D. 468π cm^2

24. Given: Circle W

W (-4, 6)
Radius = 10 units

Which point lies on circle W?

F. (0, 4)
G. (2, 10)
H. (4, 0)
J. (6, 16)