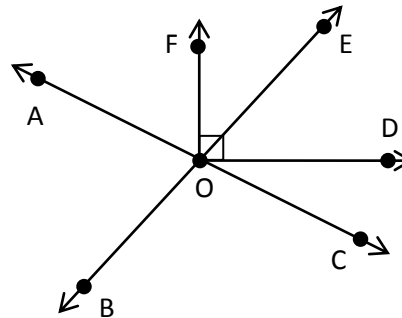For questions 1-5, use the diagram below. If the statement is true, bubble choice A. If the statement is false, bubble choice B.

_____ **1.** $\overrightarrow{AC}$ and $\overrightarrow{CA}$ are the same ray.

_____ **2.** $\angle$ FOE and $\angle$ AOB are supplementary

_____ **3.** $\angle$ FOE and $\angle$ EOD are complementary

_____ **4.** $\angle$ AOB is vertical to $\angle$ EOC

_____ **5.** $\angle$ DOB and $\angle$ DOA are adjacent angles.

Multiple Choice

_____ **6.** The angles formed by perpendicular lines are _____ right angles.

    a) Always   b) Sometimes   c) Never

_____ **7.** Vertical angles are _____ congruent.

   a) Always   b) Sometimes   c) Never

_____ **8.** Which statement it **true**?

    a. $\angle 4$ and $\angle 2$ are same-side interior angles.
    b. $\angle 1$ and $\angle 2$ are same-side interior angles.
    c. $\angle 4$ and $\angle 2$ are alternate interior angles.
    d. $\angle 4$ and $\angle 5$ are alternate interior angles.
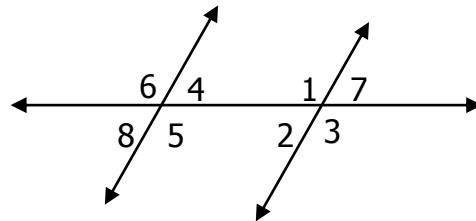
_____ **9.** If a transversal intersects two parallel lines, then _____.

    a. alternate interior angles are congruent
    b. same-side interior angles are complementary
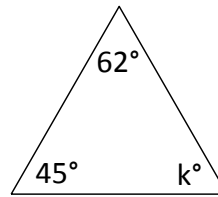   c. corresponding angles are supplementary
    d. none of these

_____ **10.** If line r is parallel to line t, then the measure of $\angle$ 5 is:
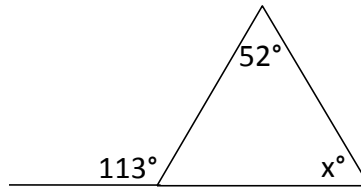
    a. 180°
    b. 135°
    c. 55°
    d. 45°
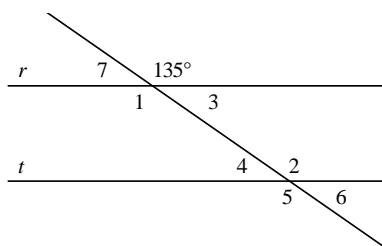
11. Find the value for 'k', the missing angle in the triangle.
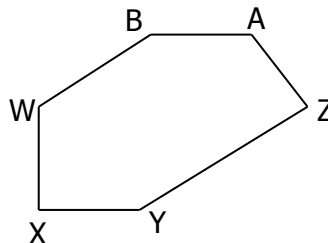
a. 93°
b. 83°
c. 73°
d. 63°

62°

45°   k°

12. Find the value of 'x' for the indicated angle measure.

a. 119°

b. 61°
c. 51°
d. 15°

52°

113°   x°

13. Classify the polygon by its number of sides and determine if it is concave or convex.

a. heptagon; concave
b. heptagon; convex
c. hexagon; concave
d. hexagon; convex

B   A

W   Z

X   Y

14. The sum of the measures of the **interior angles** of a 21-gon is:
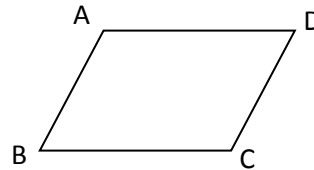
a. 4140°   b. 3780°   c. 3420°   d. 360°

15. The sum of the **exterior angles** of a pentagon is:

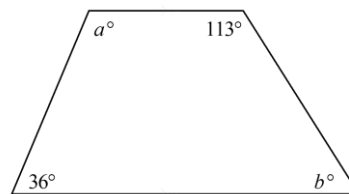a. 540°   b. 360°   c. 180°   d. 108° e.72°

16. ABCD is a parallelogram. If m ∠ D = 66°, what is the m ∠ B and the m ∠ A?

A   D

a. m ∠ B = 114°; m ∠ A = 66°
b. m ∠ B = 66°; m ∠ A = 114°
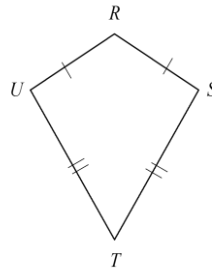c. m ∠ B = 24°; m ∠ A = 66°
d. m ∠ B = 66°; m ∠ A = 66°

B   C

17. Find the values of a and b for the trapezoid.

$a°$ 113°

a. a = 113; b = 36
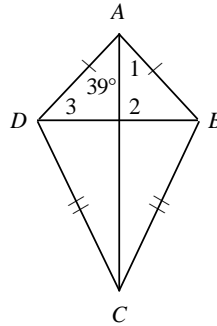b. a = 144; b = 67
c. a = 126; b = 85
d. a = 36; b = 113

36° $b°$

_____ **18.** m∠R = 130° and m∠S = 80°. Find m∠T.

a. 70°

b. 30°

c. 80°

d. 60°

_____ **19.** Find m∠1, m∠2, and m∠3 in the kite.

a. m∠1 = 51°; m∠2 = 39°; m∠3 = 77°

b. m∠1 = 39°; m∠2 = 90°; m∠3 = 51°

c. m∠1 = 45°; m∠2 = 48°; m∠3 = 41°

d. m∠1 = 39°; m∠2 = 102°; m∠3 = 39°
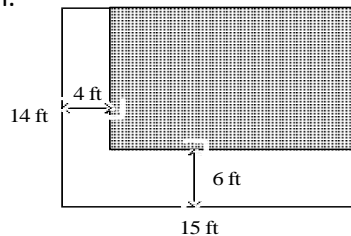
_____ **20.** A line is represented by the equation $y = -\dfrac{1}{3}x - 8$.

How would the graph of the line change if the y-intercept was changed to 2?

a.   The line would become steeper.
b.   The line would become flatter.
c.   The line would shift up.
d.   The line would slant up instead of down.

_____ **21.** Find the area of the shaded region.

a. 90 ft²

b. 210 ft²

c. 88 ft²

d. 24 ft²

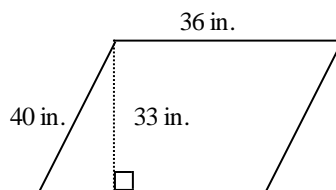_____ **22.** A circle has diameter 24 cm. What is the area of a sector bounded by a 150° arc?

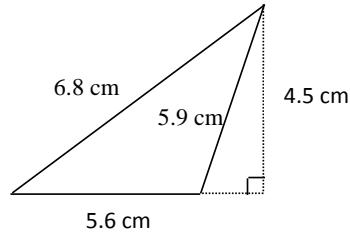a. 10π cm²   b. 144π cm²   c. 67.5π cm²   d. 60π cm²

_____ **23.** Find the area of the parallelogram.

a. 1188 in²

b. 720 in²

c. 594 in²

d. 1440 in²

____ **24.** Find the area of the triangle.

a. 16.52 cm²

b. 25.2 cm²

c. 12.6 cm²

d. 33.04 cm²

6.8 cm

5.9 cm
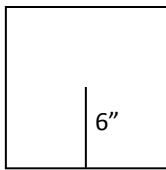
4.5 cm

5.6 cm

____ **25.** Find the area of the kite.

a. 48 ft²

b. 32 ft²

c. 64 ft²

d. 24 ft²

2′   6′

4′
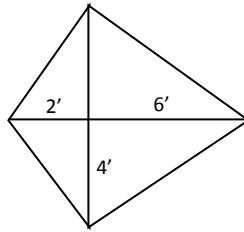
____ **26.** Find the area of the regular polygon.

a. 36 in²

b. 72 in²

c. 288 in²

d. 144 in²

6″

____ **27.** Solve: $\dfrac{x-3}{5} = \dfrac{x-1}{15}$

a) x = 0.2   b) x = 0.4   c) x = 4   d) x = 5   e) none of these

____ **28.** The scale for a map is 3 cm = 50 miles. If the distance between two cities on the map is 10.5 cm, how far apart are the two cities?

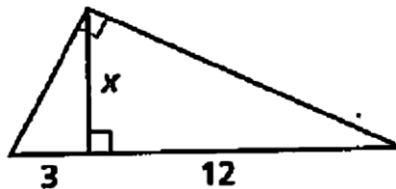a) 63 miles   b) 160 miles   c) 175 miles   d) 525 miles   e) none of these

____ **29.** $\triangle XYZ \sim \triangle RST$. What can you conclude?

a) XY = RS   b) $m\angle X = m\angle Y$ c) $m\angle S = m\angle Y$ d) none of these

____ **30.** Find the value of x.

a) x = $\dfrac{3}{4}$

b) x = 4

c) x = 6

d) x = 48

e) none of these

x

3   12

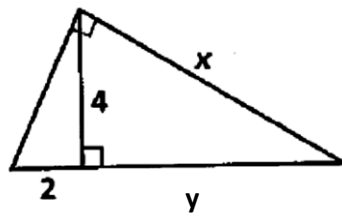**31.** Find the values of x and y.

a) $x = 4\sqrt{3}$, $y = 6$

b) $x = 40$, $y = 8$

c) $x = 4\sqrt{5}$, $y = 16$

d) $x = 4\sqrt{5}$, $y = 8$

32. Two similar triangles have perimeters in ratio 5:3. What is the ratio of their areas?

a) 5:3   b) 3:5   c) 25:9   d) 125:27   e) none of these

33. The similarity ratio of two similar figures is 2:9. What is the ratio of their perimeters?

a) 2:9   b) 4:18   c) 4:81   d) 6:27   e) none of these

34. The area ratio of two similar figures is 64:36. What is their similarity ratio?

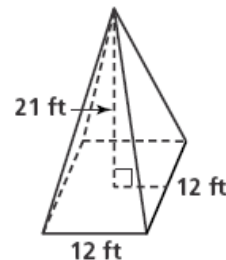a) 4:3   b) 16:9   c) 32:18   d) 64:36   e) none of these

35. Find the lateral area of the pyramid. If necessary, round answer to the *nearest tenth*.

a) 648 ft²

b) 504 ft²

c) 668.2 ft²

d) 524.2 ft²

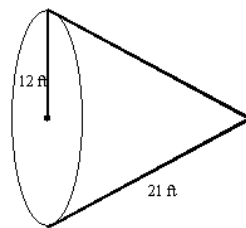**36.** Find the lateral area of the cone to the *nearest tenth* of a meter.

a) 791.7 ft²

b) 1583.4ft²

c) 197.9 ft²

d) 395.8 ft²

e) none of these

37. Find the surface area of a sphere with a radius of 11 cm to the nearest square centimeter.

a) 760 cm²   b) 1521 cm²   c) 380 cm²   d) 6082 cm²   e) none of these

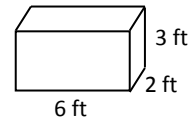**38.** What is the volume of a *square pyramid* with base edge 6 cm and height 7 cm?

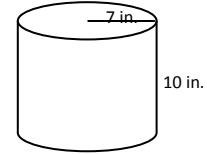a) 84 cm³   b) 98 cm³   c) 252 cm³   d) 56 cm³

_____**39.** Find the volume of the figure to the right.

a) 36 ft²   b) 18 ft²   c) 18 ft³   d) 36 ft³

3 ft

2 ft

6 ft

_____**40.** In terms of π, what is the volume of the figure to the right.

a) $238\,\pi$ in³   b) $163\frac{1}{3}\pi$ in³   c) $490\,\pi$ in³   d) $1960\,\pi$ in³

7 in.

10 in.

_____**41.** A sphere's circumference is $24\,\pi$ m². Find its volume.

a) 603.2 m³   b) 7238.2 m³   c) 21,714.7 m³   d) 224,430.5 m³

_____**42.** If two similar spheres have radii with a ratio of 4:7, what is the ratio of the circumferences of these two spheres.

a) 4:7   b) 16: 49   c) 64: 343   d) none of these

_____**43.** If two similar figures have a similarity ratio of 3:7:, what is the ratio of their volumes?

a) 3:7   b) 9:49   c) 9:21   d) 27:343

_____**44.** Two similar prisms have a similarity ratio of 3:5. If the smaller prism has a volume of 499.5 m³, what is the volume of the larger prism?

a) 92.5 m³   b) 107.9 m³   c) 1387.5 m³   d) 2312.5 m³

1. B
2. B
3. A
4. A
5. A
6. A
7. A
8. C
9. A
10. B
11. C
12. B
13. D
14. C
15. B
16. B
17. B
18. A
19. B
20. C
21. C
22. D
23. A
24. C
25. B
26. D
27. C
28. E
29. C
30. C
31. D
32. C
33. A
34. A
35. D
36. A
37. B
38. A
39. D
40. C
41. B
42. A
43. D
44. D