

Geometry B Semester Review

Chapters 7-12

Identify each statement as true or false

1. An octagon has more sides than a heptagon.
2. The area of a trapezoid is equal to the product of the height and the length of the midsegment.
3. If a triangle has sides of length 33 cm, 44 cm, and 55 cm, then the triangle is a right triangle.
4. If a cone and a cylinder have congruent bases, then the volume of the cylinder is three times the volume of the cone.
5. If the corresponding sides of two quadrilaterals are proportional, then the two quadrilaterals are similar.
6. If the corresponding surface areas of two similar prisms are in the ratio 16 to 49, then their volumes are in the ratio 163 to 493.
7. In a right triangle, the ratio of the length of the side opposite acute angle A to the length of the side adjacent to angle A is called the sine of angle A .
8. In a 30° - 60° - 90° triangle, the side opposite the angle with measure 60° is half the length of the hypotenuse.
9. All angles inscribed in a semicircle are right angles.

Identify each statement as true or false.

10. If a cone and a cylinder have the same radius and the same height, then the volume of the cone is $\frac{1}{3}$ the volume of the cylinder.

Identify each statement as true or false.

11. If the edge lengths of two similar prisms are in the ratio $\frac{p}{q}$, then the surface areas of the prisms are in the ratio $\frac{p^3}{q^3}$.
12. Any two squares are similar.
13. The formula for the surface area of a sphere is $V = \frac{4}{3}\pi r^2$, where r is the radius of the sphere.
14. If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.
15. For any angle A , $\sin^2 A - \cos^2 A = 1$.
16. A sphere is the set of all points in space at a given distance from a given line.
17. The Law of Cosines applies to right triangles only.

Choose the correct answer.

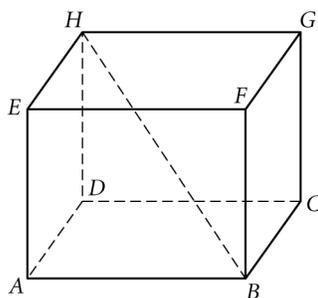
18. Which polygon cannot be used to create a regular tessellation?
 - A. Equilateral triangle
 - B. Square
 - C. Regular pentagon
 - D. Regular hexagon
 - E. None of these

Choose the correct answer.

19. A sector of a circle has a central angle measuring 80° . If the area of the sector is $32\pi \text{ m}^2$, what is the radius of the circle?

A. 6 m
B. $6\sqrt{2}$ m
C. 9 m
D. 12 m
E. $144\sqrt{2}$ m

20. In a right rectangular prism, $AD = 15$ cm, $CD = 20$ cm, and $CG = 20$ cm. What is the length of diagonal \overline{BH} in centimeters?



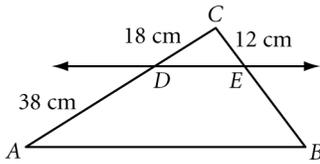
- A. 25 m
B. $5\sqrt{41}$ m
C. $25\sqrt{41}$ m
D. 625 m
E. $625\sqrt{41}$ m
21. A scientist finds a clump of mysterious metal on his laboratory floor. He weighs it and finds that it has a mass of 702.8 grams. He then drops it into a cylindrical container, causing the water level to rise 2.2 cm. The radius of the base of the container is 3.0 cm. Use the table below to determine what type of metal the scientist has found. (Assume the metal is pure.)

Metal	Silver	Lead	Platinum	Gold
Density g/cm^3	10.5	11.3	21.4	19.3

A. Silver
B. Lead
C. Platinum
D. Gold
E. None of these

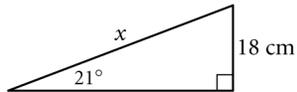
Choose the correct answer.

22. $\overline{DE} \parallel \overline{AB}$, $BE = \underline{\hspace{1cm}}$



- A. 22 cm
- B. $25\frac{1}{3}$ cm
- C. 57 cm
- D. 76 cm
- E. None of these

23. Which of the following expressions represents the value of x ?



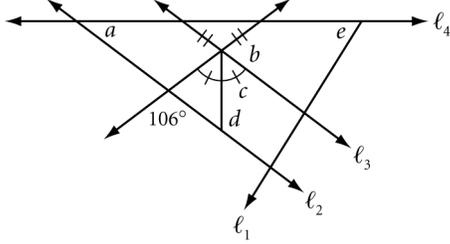
- A. $\frac{18}{\sin 21^\circ}$
- B. $\frac{18}{\cos 21^\circ}$
- C. $\frac{18}{\tan 21^\circ}$
- D. $18 \tan 21^\circ$
- E. $18 \sin 21^\circ$

24. What is the surface area of a sphere with radius 3 cm?

- A. $6\pi \text{ cm}^2$
- B. $12\pi \text{ cm}^2$
- C. $18\pi \text{ cm}^2$
- D. $36\pi \text{ cm}^2$
- E. None of these

Find each angle measure.

25. $l_2 \parallel l_3$, $l_1 \perp l_2$



$a = \underline{\hspace{2cm}}$

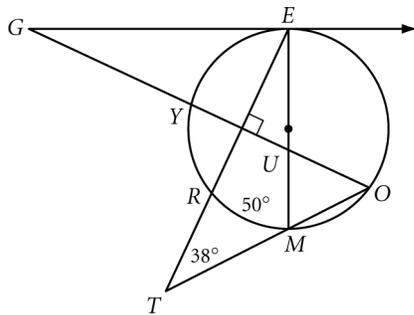
$b = \underline{\hspace{2cm}}$

$c = \underline{\hspace{2cm}}$

$d = \underline{\hspace{2cm}}$

$e = \underline{\hspace{2cm}}$

26. \overrightarrow{GE} is a tangent. \overline{ME} is a diameter.



$m\widehat{YE} = \underline{\hspace{2cm}}$

$m\angle OGE = \underline{\hspace{2cm}}$

$m\angle MOG = \underline{\hspace{2cm}}$

$m\angle MER = \underline{\hspace{2cm}}$

$m\angle GUM = \underline{\hspace{2cm}}$

Complete each statement.

27. A composition of two reflections over two parallel lines is equivalent to a single _____.

28. The distance between points $b-3, 7j$ and $b-12, 3j$ is _____.

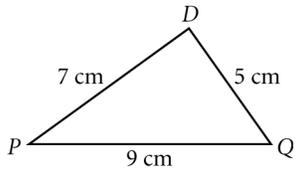
Complete each statement.

29. A translation of $(6, -4)$ followed by a translation of $(-3, -5)$ is equivalent to a translation of _____.
30. A triangle has an area of 12 cm^2 . If the length of one side of the triangle is 6 cm, then the length of the altitude to that side must be _____.
31. If a circle has area 32 ft^2 , then a 135° sector of the circle has area _____.
32. The only polygons that can be used to form a regular tessellation are equilateral triangles, regular hexagons, and _____.
33. If a circle has circumference $18\pi \text{ cm}$, then its area is _____.
34. If the length of the longer leg of a 30° - 60° - 90° triangle is x , then the length of the shorter leg is _____ and the length of the hypotenuse is _____.
35. The line of reflection is the _____ of every segment joining a point in the original figure with its image.
36. A square with a diagonal of length 14 cm has area _____.
37. A circle with equation $x^2 + y^2 + 4y = 9$ has center _____ and radius _____.
38. The ordered pair rule $(x, y) \rightarrow ___$ represents a reflection over the x -axis.
39. In a right triangle, if m and n are the lengths of the legs and p is the length of the hypotenuse, then _____.
40. The surface area of a cube with edge length 5 in. is _____.
41. A _____ is a transformation that slides a figure along a straight-line path, moving each point the same distance in the same direction.

42. Draw a design that has a horizontal line of symmetry but no vertical line of symmetry.

43. Draw a design that has rotational symmetry. Specify the angle of rotation.

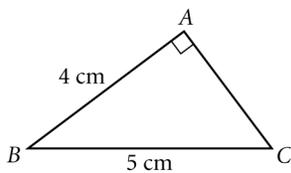
44. Tell whether $\triangle PDQ$ is a right triangle, and explain how you know.



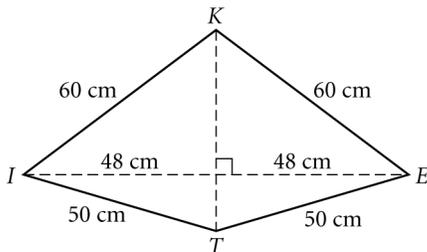
45. Is the triangle with vertices $L(4, -3)$, $M(2, 1)$, $N(-2, -1)$ scalene, isosceles, or equilateral? Justify your answer.

Find each area.

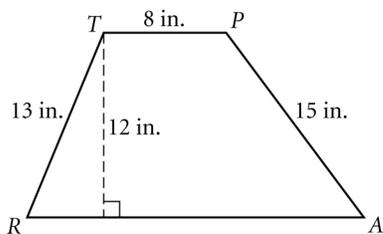
46. Area of $\triangle ABC = \underline{\hspace{2cm}}$



47. Area of kite $KITE = \underline{\hspace{2cm}}$

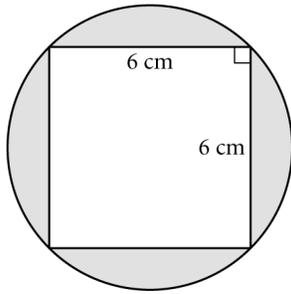


48. Area of trapezoid $TRAP = \underline{\hspace{2cm}}$



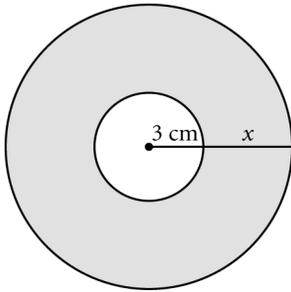
Find each area.

49. Area of shaded region = ___



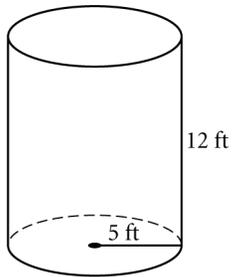
50. Area of shaded region = $91\pi \text{ cm}^2$

$x =$ ___



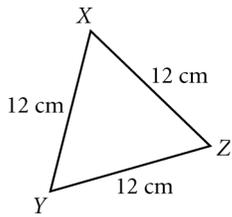
51. Find each area.

Surface area = ___



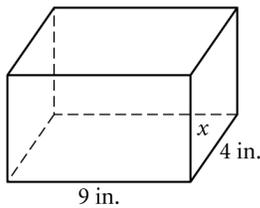
Find each area.

52. Area of $\triangle XYZ = \underline{\hspace{2cm}}$



53. Surface area = 228 in^2

$x = \underline{\hspace{2cm}}$



Complete each statement.

54. Two polygons are similar if and only if the corresponding angles are _____ and the corresponding sides are _____.
55. If two sides of a triangle have length 14 cm and 10 cm, and the angle between the two sides measures 30° , then the area of the triangle is _____.
56. If a cylinder has height h and a base of diameter x , then its volume is _____.
57. If a line cuts two sides of a triangle proportionally, then it is _____ to the third side.
58. The density of a substance is calculated by dividing its _____ by its _____.
59. If the surface areas of two similar cylinders are in the ratio $\frac{64}{81}$, then the volumes are in the ratio _____.

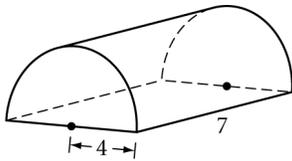
Complete each statement.

60. If $\cos B = \frac{4}{5}$ and $\sin B = \frac{3}{5}$, then $\tan B = \underline{\hspace{2cm}}$.

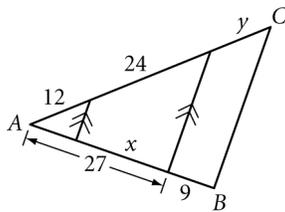
61. If the rule $(x, y) \rightarrow (3x, 3y)$ is applied to a triangle with area 6 cm^2 , then the area of the image triangle is .

Solve each problem. Round answers to two decimal places. All lengths are in centimeters.

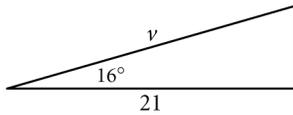
62. Volume $\approx \underline{\hspace{2cm}}$



63. $x = \underline{\hspace{2cm}}$
 $y = \underline{\hspace{2cm}}$

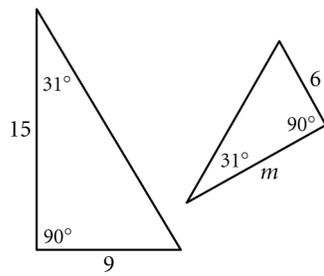


64. $v \approx \underline{\hspace{2cm}}$

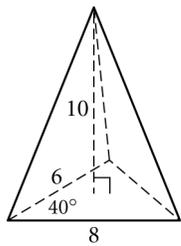


Solve each problem. Round answers to two decimal places. All lengths are in centimeters.

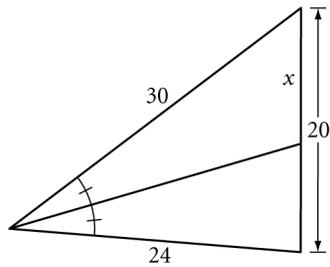
65. $m = \underline{\hspace{2cm}}$



66. Volume $\approx \underline{\hspace{2cm}}$

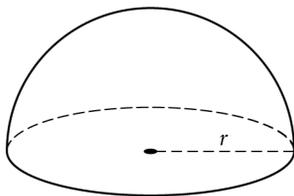


67. $x \approx \underline{\hspace{2cm}}$



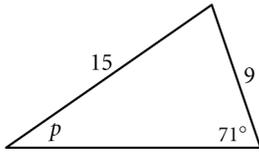
68. Volume = $18\pi \text{ cm}^3$

$r = \underline{\hspace{2cm}}$

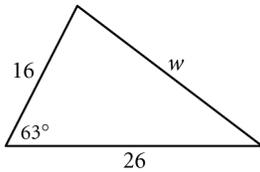


Solve each problem. Round answers to two decimal places. All lengths are in centimeters.

69. $p \approx$ ___



70. $w \approx$ ___



71. A chunk of copper with mass 538.2 g is dropped into a container, causing the water level to rise 2 cm. The container is a rectangular prism with base 6 cm by 5 cm. What is the density of copper?
72. A yardstick casts a shadow 2 ft 3 in. long at the same time a tree casts a shadow 63 ft long. How tall is the tree, to the nearest foot?
73. The angle of elevation from a ship to the top of a 35 m lighthouse on the shore (at sea level) measures 28° . To the nearest meter, how far is the ship from the shore?