

**Directions:** Using the rule provided, describe the transformation or sequence of transformations that have occurred.

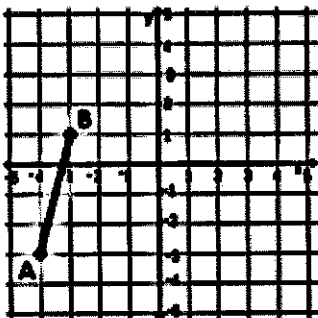
- 1)  $(x, y) \rightarrow (y, x + 2)$       2)  $(x, y) \rightarrow (-y, -x)$       3)  $(x, y) \rightarrow (-x, 3y)$       4)  $(x, y) \rightarrow (-y, x)$

**Directions:** Write the rule to represent the transformation.

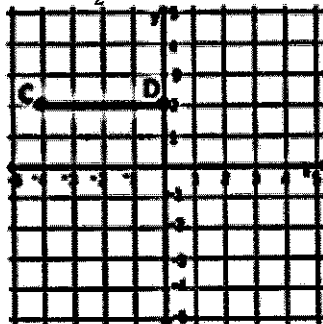
- 5) Rotate  $180^\circ$  CW about the origin      6) Horizontal stretch of 10  
 7) Translate 4 units left and 8 units up      8) Reflect over  $y = x$   
 9) Rotate  $270^\circ$  CCW about the origin      10) Dilate by a scale factor of  $\frac{1}{3}$

**Directions:** Graph the transformation using the given information.

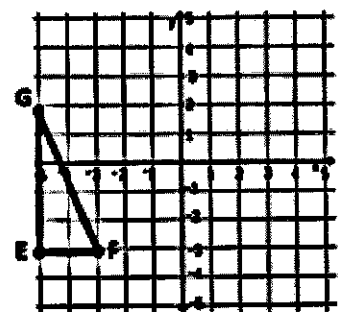
- 11)  $(x, y) \rightarrow (x, 1.5y)$



- 12) Dilate by  $\frac{1}{2}$ ; then, reflect over  $x = 1$



- 13) Rotate  $180^\circ$  CW about  $(-1, 0)$



**Directions:** Solve each problem.

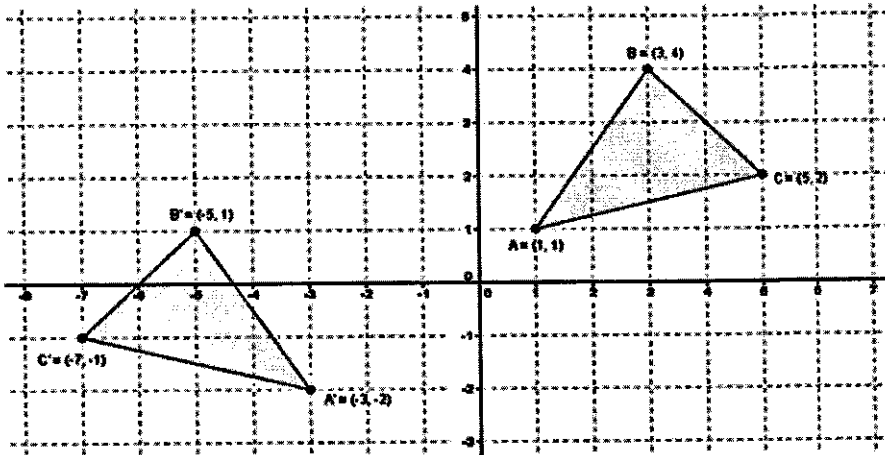
- 14) If  $Z(3, -4)$ , what is  $Z''$  after it has been rotated  $180^\circ$  CW and then vertically stretched by 5?  
 15) If  $R'(0, 5)$ , what is  $R$  if the following rule was used to produce the image:  $(x, y) \rightarrow (-y, -x)$ ?  
 16) If  $J(3, 1)$  is reflected over  $y = x$ , dilated by 3 with a center at  $(1, 2)$ , and then rotated  $90^\circ$  CCW, what is  $J'''$ ?

Directions: Describe the sequence of transformations.

17)  $(x, y) \rightarrow '(x - 2, y) \rightarrow ''(y, x - 2) \rightarrow ''(-y, x - 2)$

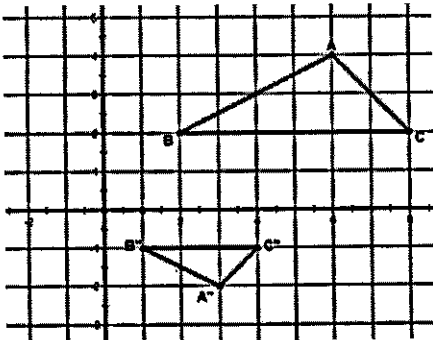
18)  $(x, y) \rightarrow '(6x, y) \rightarrow ''(-y, 6x) \rightarrow ''(-6x, y)$

19)

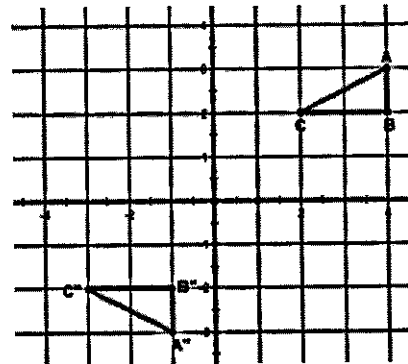


Directions: Determine how to map the pre-image onto the image.

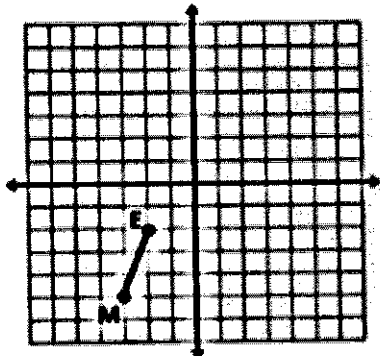
20)



21)



Directions: Determine how to map the pre-image onto itself using the given number of transformations.



22) 1 transformation

23) 2 transformations

24) 3 transformations

Directions: Solve for x. Then find the missing angle.

1)

$x = \underline{\hspace{2cm}}$   
 $m\angle TUA = \underline{\hspace{2cm}}$

2)

$x = \underline{\hspace{2cm}}$   
 $m\angle A = \underline{\hspace{2cm}}$

Directions: Classify the triangle by its angles.

- 3)  $m\angle A = (4x + 10)^\circ$   
 $m\angle B = (-3x + 60)^\circ$   
 $m\angle C = (x + 74)^\circ$

Direction: Classify the triangle by its sides.

4)

Directions: Determine if the triangles are congruent. If they are, justify your answer & write a triangle congruence statement.

5)

6)

7)

Directions: Determine the missing information needed to prove the triangles are congruent with the given theorem or postulate.

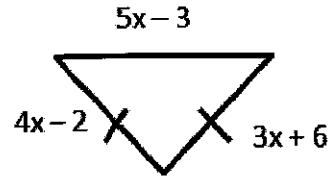
8) ASA

9) SSS

10) AAS

11) Given that  $\triangle CDE \cong \triangle HIJ$ ,  $CE = 5x$ , and  $HJ = 2x + 15$ , find  $x$  and  $CE$ .

12) What is the length of the longest side?



13) What is the measure of the vertex angle in an isosceles triangle if a base angle measures  $45^\circ$ ?

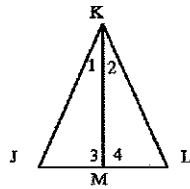
14) In an isosceles triangle, a vertex angle measures  $3x$  and a base angle measures  $x$ . What is the measure of each of the angles in the isosceles triangle?

**Directions:** Determine if the following side lengths can be used to make a triangle. If they are, write the sides in order from least to greatest and then the angles in order from least to greatest.

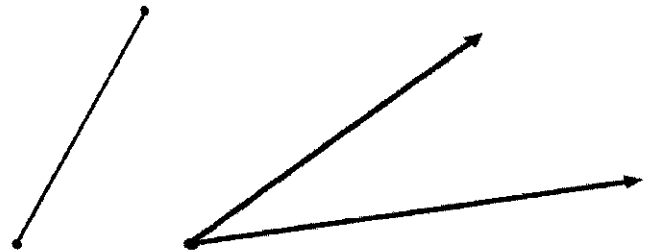
15)  $AB = 5$ ,  $BC = 8$ ,  $AC = 10$

16)  $MN = 3$ ,  $LN = 2$ ,  $ML = 5$

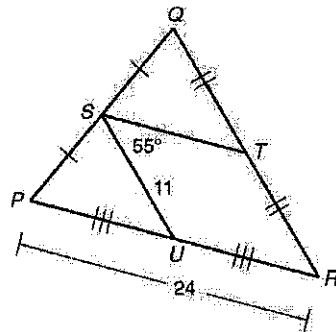
17) Given:  $\angle 1 \cong \angle 2$   
 $\angle 3 \cong \angle 4$   
 Prove:  $\triangle JKL$  is isosceles



18) Copy the segment and angle onto another piece of paper. Then, bisect the segment and angle.



**Directions:** Use the triangle midsegment theorem and the figure below to answer 19 – 22.



19)  $ST$  \_\_\_\_\_

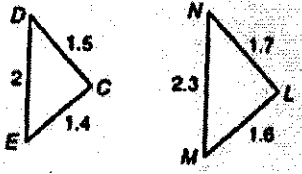
20)  $QR$  \_\_\_\_\_

21)  $PU$  \_\_\_\_\_

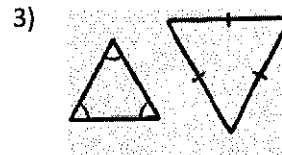
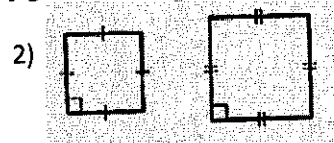
22)  $m\angle SUP$  \_\_\_\_\_

**Directions:** Determine whether the polygons are similar. If so, write the similarity ratio and the similarity statement. If not, explain why not.

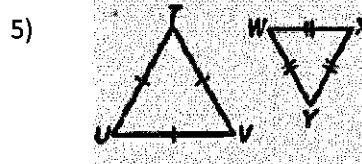
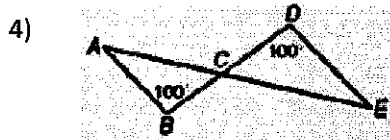
1)  $\triangle CDE$  and  $\triangle LMN$



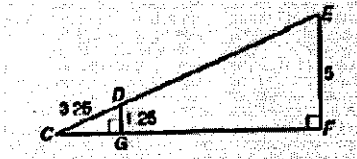
**Directions:** Tell whether the polygons must be similar based on the information in the given figures.



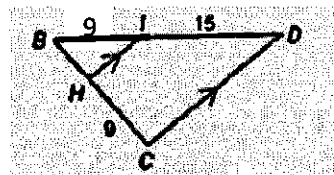
**Directions:** Explain why the triangles are similar (what postulate supports the similarity), & write a similarity statement.



6) Explain why the triangles are similar, & find DE.

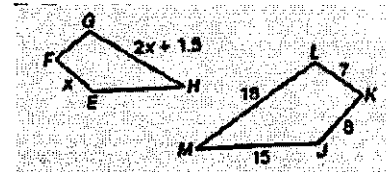


7) What is BH?

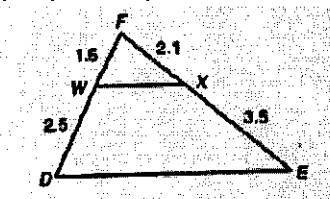


**Directions:** Solve.

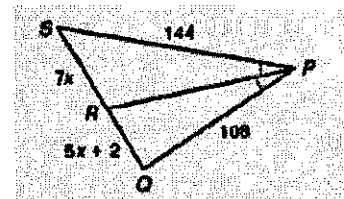
8) What is FE if  $FGHE \sim KLMJ$ ?



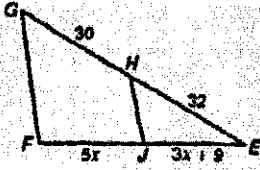
9) Explain why  $\overline{WX} \parallel \overline{DE}$ .



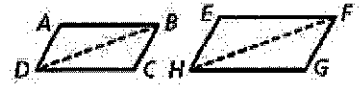
10) What is SQ?



11) Is  $\overline{GF} \parallel \overline{HJ}$  if  $x = 5$ ? Explain.



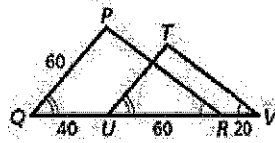
12) Parallelogram  $ABCD \sim$  Parallelogram  $EFGH$ . Which similarity postulate or theorem lets you conclude that  $\triangle BCD \sim \triangle FGH$ ?



13) If 6, 8, and 12 and 15, 20, and  $x$  are the lengths of the corresponding sides of two similar triangles, what is the value of  $x$ ?

14) What is the length of  $\overline{TU}$ ?

- (A) 36
- (B) 40
- (C) 48
- (D) 90



15) What value of  $y$  makes the two rectangles similar?

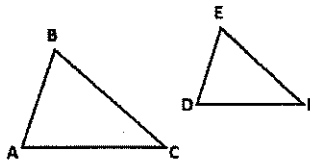


16) Can side lengths 1.5, 2.5, 3.5 and 6, 10, 12 be corresponding sides of similar triangles?

17) Complete the proof.

Given:  $\angle B \cong \angle E$ ;  $\frac{AB}{DE} = \frac{BC}{EF}$

Prove:  $\angle A \cong \angle D$



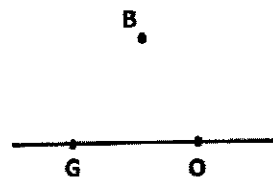
18) What can't we use CPCTC to prove  $\angle A \cong \angle D$  in question #17?

Directions: Complete the construction using a straightedge and a compass.

19)  $\overline{PA} \perp \overline{MA}$



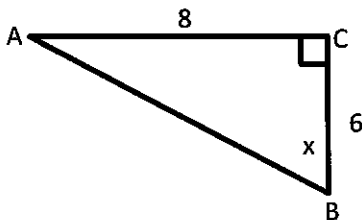
20)  $\overline{BE} \parallel \overline{GO}$



**Directions: Solve.**

- 1) Write  $\sin 30^\circ$  in terms of cosine.
- 2) Write  $\cos 45^\circ$  as a trigonometric ratio. (Hint: draw a picture).
- 3) Given a square with a diagonal of 40 m, what is the perimeter of this square?
- 4) Find the perimeter of an equilateral triangle that has an altitude of 10 ft.
- 5) If  $\tan A = \frac{5}{8}$ , what is the  $m\angle A$ ?
- 6) The leg of a  $45^\circ$ - $45^\circ$ - $90^\circ$  triangle measures 9 inches. What is the perimeter of this triangle?
- 7) In  $\triangle ABC$ ,  $BC = 10$ ,  $BA = 12$ , &  $m\angle BCA = 90^\circ$ . What is  $m\angle A$ ?
- 8) In a right triangle,  $\sin x = \frac{4}{5}$ . What is the value of  $\cos x$ ?

**Directions: Solve the triangles then use the figure to answer the questions. Round angles to the nearest degree and sides to the nearest tenth.**



- 9) What is the length of AB?
- 10) What is the measure of  $x$ ?
- 11) What trigonometric ratio represents  $\sin x$ ?
- 12) What is the ratio of  $\cos x$ ?
- 13) What is  $m\angle A$ ?
- 14) What is the length of AB?
- 15) What is CB?
- 16) Fill in the blank:  $\cos B = \underline{\hspace{1cm}} A$

$\triangle ABC$  is a right triangle.  $AB$  is the hypotenuse. Angle  $B$  is  $70^\circ$ .  $AC = 10$ .

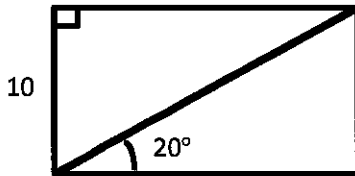
**Directions: Use the scenario to answer questions 17 – 18:** *A very adorable kitten is stranded 20 feet high in a tree. A fireman comes to rescue the kitten and wants to place a ladder with an angle of elevation of  $53^\circ$  for ease in climbing it.*

17) What does the length of the ladder need to be (to the nearest whole number) to reach this kitten at this angle of elevation?

18) How far should he place the ladder from the trunk of the tree?

19) What is the length of the diagonal inside the rectangle?

20) What is the second largest angle in a 5-12-13 triangle? Is this triangle acute, right, or obtuse?



21) In a right triangle,  $\sin x = \frac{6}{10}$ . What is  $\tan x$ ?

22) What is the perimeter of an equilateral triangle with an altitude of  $12\sqrt{3}$  units?

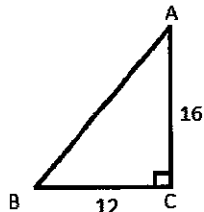
23) A pirate sees a sunken treasure that is 100 feet below the water. The angle of depression from where his boat is to where the treasure is measures  $45^\circ$ . The pirate puts on scuba gear and decides to swim directly to the treasure. How far does he have to swim?

24) Lucy, whose eye level is 4 feet from the ground, stands 10 feet away from the base of a tree. From her line of sight, she is looking at an angle of elevation of  $40^\circ$  to the top of the tree. How tall is the tree?

25) A triangle has vertices of  $M(4, 1)$ ,  $A(-1, 1)$ , &  $P(4,-3)$ . What is  $m\angle MAP$ ?

26) What is the area of a square with a diagonal that measures 15 units?

**Directions: Use the figure to find each of the following.**



27)  $\sin A$

29)  $m\angle A$

31)  $\sin(90 - A)$

28)  $\cos A$

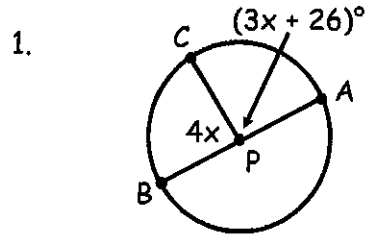
30)  $m\angle B$

32)  $\cos(90 - B)$

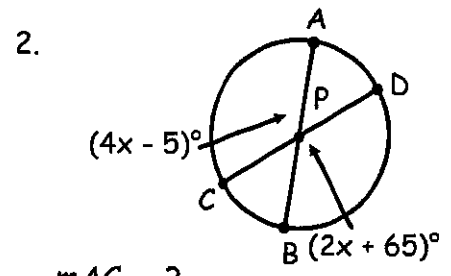


Name \_\_\_\_\_

In 1-2, use  $\odot P$  to find the value of  $x$ . Then, find the arc measures.



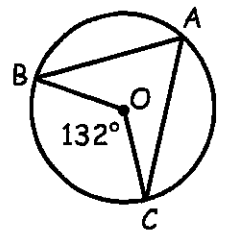
$mBC = ?$   
 $mAC = ?$



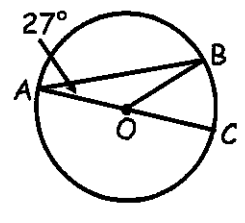
$mAC = ?$   
 $mBD = ?$

Find the measure of the indicated arc or angle in  $\odot O$ .

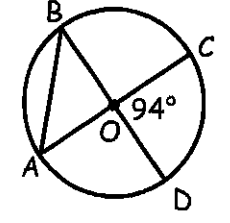
3.  $m\angle BAC = ?$



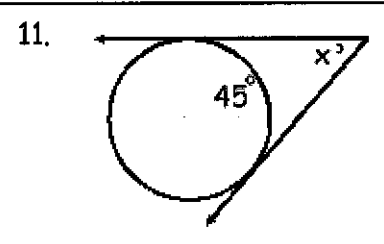
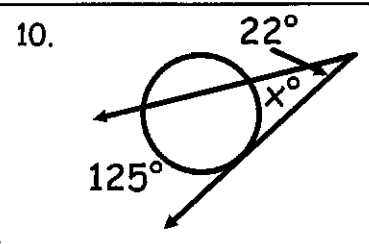
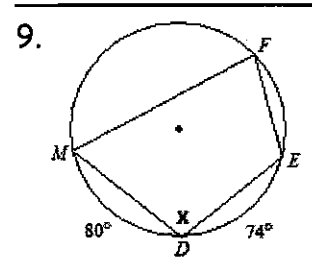
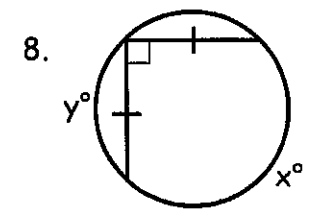
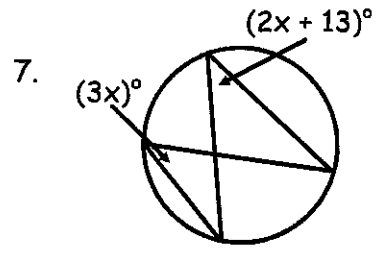
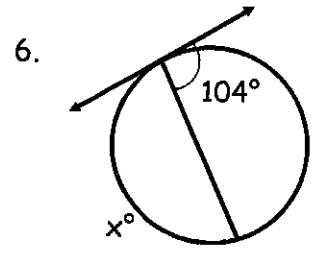
4.  $mBC = ?$



5.  $m\angle BAC = ?$

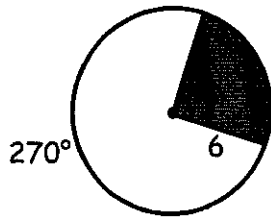


Find the value of each variable.



---

12. Find the area and arc length of the shaded region.



---

13. The area of one piece of pizza is  $9\pi \text{ in}^2$ . The pizza is cut into eighths. Find the radius of the pizza pie.

---

14. Determine the radius of the circle with a circumference of  $26\pi \text{ cm}^2$ . Use the radius to then find the area.

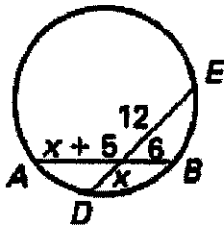
---

15. A sprinkler system can shoot water at a distance of 15 yards. It is set up to rotate 240 degrees. How much area of the yard is covered by the sprinkler?

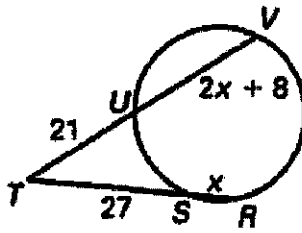
---

16. The clock in our classroom has a radius of 9 inches. If it's 4:00, find the arc length and area of the sector for this time.

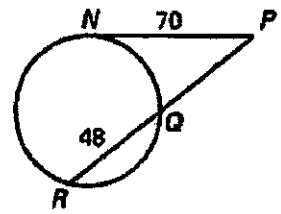
17. Find AB



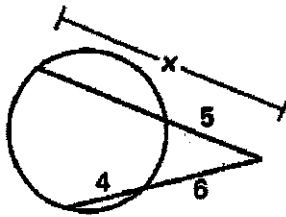
18. Find TV



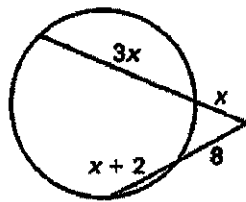
19. Find PQ



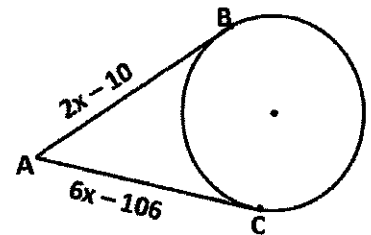
20. Solve for x



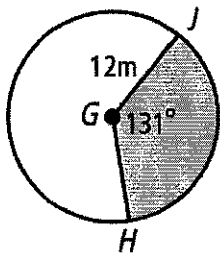
21. Solve for x



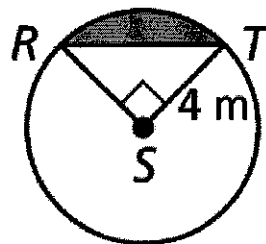
22. Find AB



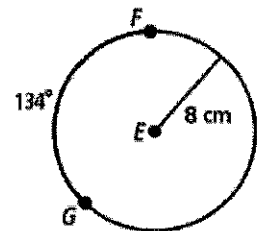
23. Find the area of the sector



24. Find the area of the shaded region

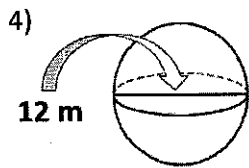
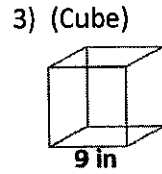
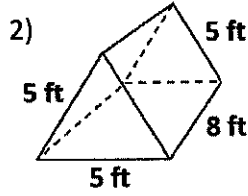
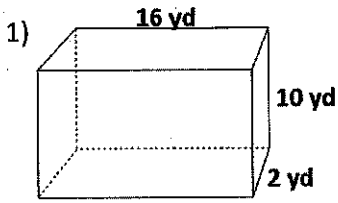


25. Find  $m\widehat{FG}$

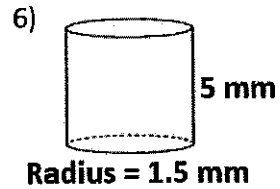
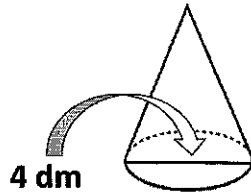


Name \_\_\_\_\_

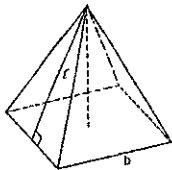
Directions: Find the volume of each shape with the given information.



5) The height is double the radius.

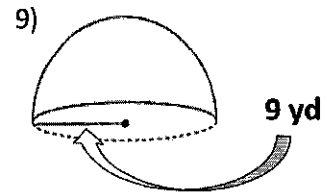
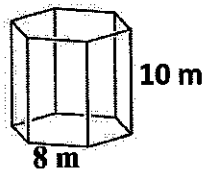


7) Regular Pyramid



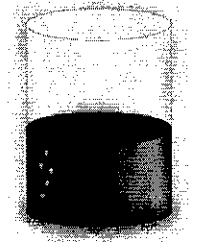
$l = 13 \text{ ft}$   
 $b = 24 \text{ ft}$

8) Regular Prism



10) The volume of a ball is  $972\pi \text{ cm}^3$ . What is the circumference of the great circle of this ball to the nearest tenth?

11) The volume of the cylinder is  $552.9 \text{ in}^3$ . The diameter of this cylinder is 8 in. If the volume of the water is  $301.6 \text{ in}^3$ , what is the distance between the top of the water line to the top of the cylinder?

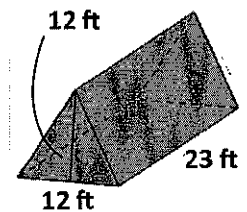
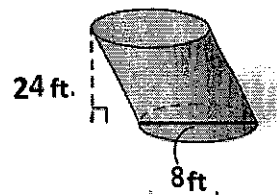
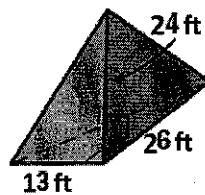
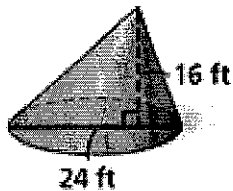


12) The circumference of the Earth is estimated to be about  $7920\pi$  miles. The diameter of the moon is estimated to be 2160 miles. How does the volume of the Earth compare to the volume of the moon?

13) A 4 in tall rectangular brick patio has an area of  $120 \text{ ft}^2$ . If the density of brick is 130 pounds per cubic foot, how many pounds is the weight of the patio?

14) A regular pentagonal prism has an apothem of 3 inches and a height of 5 inches. The apothem is increased by 3 feet and the height is doubled. What is the volume of the new prism?

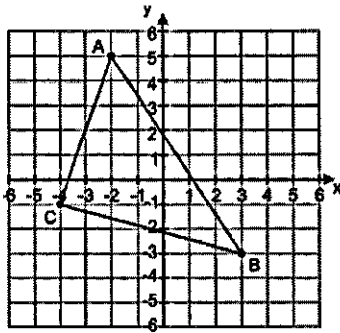
15) Name the solids in order from the smallest volume to the largest volume.



## Geometry EOC Study Guide

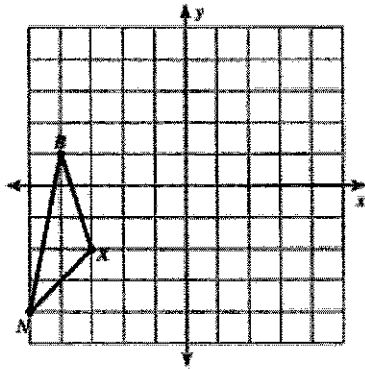
Directions: Select the best answer.

- 1) Which of the following would **NOT** be true if  $\triangle ABC$  was stretched horizontally by a scale factor of 2?



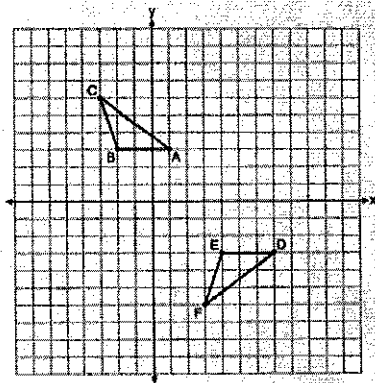
- A) The rule  $(x, y) \rightarrow (2x, y)$  would represent this transformation.
- B) The transformation would preserve distance but not the angle measures.
- C)  $A'$  would be represented by the ordered pair of  $(-4, 5)$ .
- D)  $\triangle ABC$  would remain a scalene triangle.

- 2) Which of the following would NOT be true given the figure below?



- A) If  $\triangle MBXN$  were translated by the rule  $(x, y) \rightarrow (x - 3, y + 2)$ ,  $B'$  would be represented by the ordered pair  $(-7, 3)$ .
- B) If  $\triangle MBXN$  were rotated  $90^\circ$  CW about  $(-4, 1)$ ,  $X'$  would be represented by the ordered pair  $(-7, 0)$ .
- C) If  $\triangle MBXN$  were dilated by a scale factor of 3 with a center of dilation at  $(-1, 2)$ ,  $N'$  would be represented by the ordered pair  $(-11, -20)$ .
- D)  $\triangle MBXN$  were reflected over the line  $y = x$ ,  $B'$  would be represented by the ordered pair  $(1, -4)$ .

- 3) What would map  $\triangle ABC$  to  $\triangle DEF$  if two transformations were used?

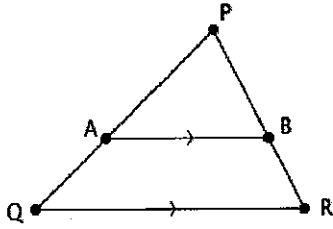


- A) A reflection over  $x = 1$  and the translation of  $(x + 3, y - 6)$  units
- B) A reflection over  $y = 3$  and the translation of  $(x + 6, y - 6)$  units
- C) A rotation of  $180^\circ$  CCW about the origin and the translation 8 units right
- D) None of these

- 4) Which transformation does not result in rigidity?

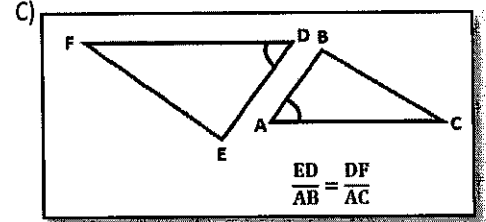
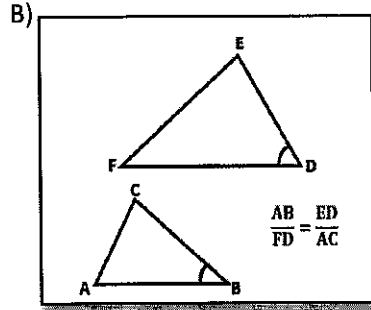
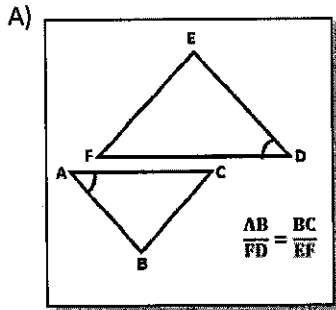
- A)  $(x, y) \rightarrow (x - 5, y + 1)$
- B)  $(x, y) \rightarrow (-y, -x)$
- C)  $(x, y) \rightarrow (x, \frac{1}{2}y)$
- D)  $(x, y) \rightarrow (-y, x + 2)$

5) In the figure below, if  $PB = 12$ ,  $RB = 9$ ,  $AP = x + 4$ , and  $QA = 2x$ , what is the length of  $\overline{AP}$ ?



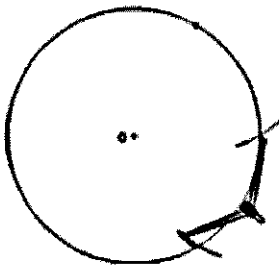
- A) 6.4
- B) 13
- C) 9
- D) 7.6

6) Which set of figures has enough information to prove that  $\triangle ABC \sim \triangle DEF$  by SAS~ postulate?



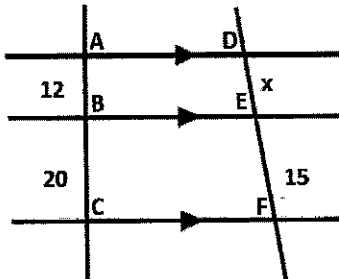
D) None of these figures

7) What is the construction being created below, and after this step in the construction is completed, what is the following step?



- A) circumscribed regular pentagon; create a perpendicular bisector
- B) inscribed equilateral triangle; connect every other point using a straightedge
- C) circumscribed regular hexagon; connect every point using a straightedge
- D) inscribed square; create the perpendicular bisectors from each arc and circle intersection

8) What is DF in the figure below?

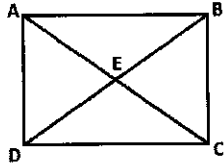


- A) 24
- B) 21
- C) 32
- D) 8

9) In an isosceles triangle, the ratio of the vertex angle to the base angle is 5:2. What is the measure of the vertex angle?

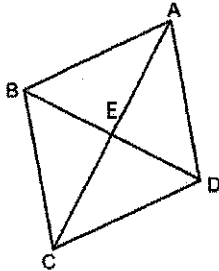
- A)  $75^\circ$
- B)  $30^\circ$
- C)  $100^\circ$
- D)  $45^\circ$

10) ABCD is a rectangle. If DB = 16, what is AE?



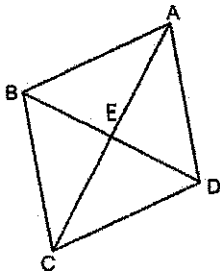
- A) 16
- B) 8
- C) 32
- D) 4

11) ABCD is a rhombus.  $m\angle ABD = 47^\circ$  and  $BC = 18$ . What is  $m\angle DAB$  and the PERIMETER of ABCD?



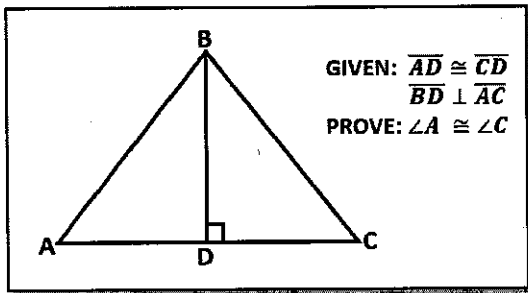
- A)  $m\angle DAB = 86^\circ$  and  $\text{Perimeter}_{ABCD} = 72$
- B)  $m\angle DAB = 94^\circ$  and  $\text{Perimeter}_{ABCD} = 72$
- C)  $m\angle DAB = 66.5^\circ$  and  $\text{Perimeter}_{ABCD} = 324$
- D) None of these

12) Sadie has already proven that  $\overline{BC} \cong \overline{AD}$  and  $\angle DAC \cong \angle BCA$ . What additional statement will help Sadie prove ABCD is a parallelogram?



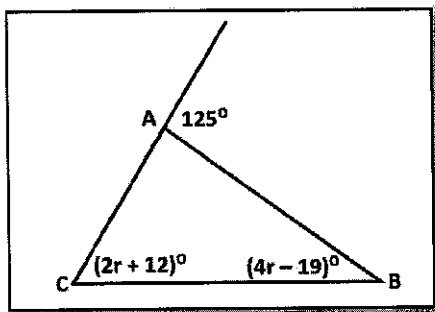
- A)  $\overline{AB} \cong \overline{BC}$
- B)  $\overline{AD} \parallel \overline{BC}$
- C)  $\angle ADC \cong \angle CBA$
- D) None of these

13) Which set of statements would not be used to complete the proof?



- A)  $\triangle ABD \cong \triangle CBD$  by HL Congruence
- B)  $\angle A \cong \angle C$  by CPCTC
- C)  $\angle ADB$  and  $\angle CDB$  are right angles as perpendicular lines form right angles
- D)  $\overline{BD} \cong \overline{BD}$  by the reflexive property

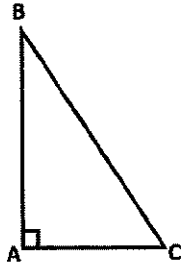
14) What is the measure of  $\angle B$  in the figure?



- A)  $69^\circ$
- B)  $72^\circ$
- C)  $56^\circ$
- D)  $22^\circ$



15) If  $BC = 24$  and  $AC = 9$ , what is  $m\angle B$  to the nearest degree?



- A)  $22^\circ$
- B)  $36^\circ$
- C)  $41^\circ$
- D) none of these

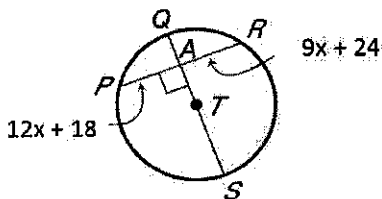
16) An airplane that is flying in the sky is 20,000 feet away from a landing strip. The current angle of depression from the airplane to the landing strip is  $20^\circ$ . What is the altitude of the airplane to the nearest foot?

- A) 18794 feet
- B) 6840 feet
- C) 58476 feet
- D) 21284 feet

17) What trigonometric ratio has the same value as  $\cos 48^\circ$ ?

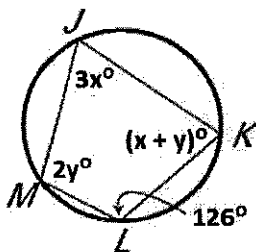
- A)  $\tan 48^\circ$
- B)  $\sin 48^\circ$
- C)  $\tan 42^\circ$
- D)  $\sin 42^\circ$

18) If  $AT = 56$ , what is the measure of the radius in the figure below? The figure is not drawn to scale.



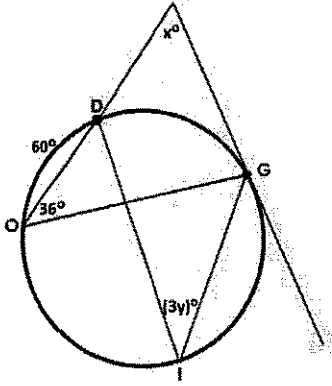
- A) 35 units
- B) 70 units
- C) 51 units
- D) 47 units

19) What is  $m\angle M$ ?



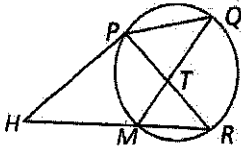
- A)  $58^\circ$
- B)  $112^\circ$
- C)  $108^\circ$
- D)  $72^\circ$

20) What is the value of  $x$  and  $y$  in the figure below?



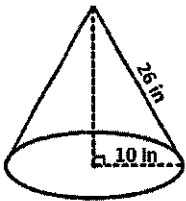
- A)  $x = 72$  and  $y = 24$
- B)  $x = 72$  and  $y = 13$
- C)  $x = 144$  and  $y = 12$
- D)  $x = 78$  and  $y = 12$

21) In the figure below,  $T$  is NOT the center of the circle.  $PT = 20$ ,  $TQ = 4y$ ,  $TM = 8$ ,  $TR = 16$ ,  $PH = 18$ ,  $HM = 12$ , &  $MR = x$ . What are the values of  $x$  and  $y$ ?



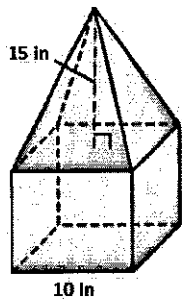
- A)  $x = 12$  and  $y = 15$
- B)  $x = 15$  and  $y = 10$
- C)  $x = 8$  and  $y = 10$
- D)  $x = 11.5$  and  $y = 12$

22) What is the exact volume of the cone below?



- A)  $\frac{2600\pi}{3} \text{ in}^3$
- B)  $2600\pi \text{ in}^3$
- C)  $800\pi \text{ in}^3$
- D)  $2400\pi \text{ in}^3$

23) A cement block is made by pouring concrete into a mold in the shape of the figure below. In this mold, the base of the pyramid aligns perfectly to a side of the cube. What is the volume of the cement?

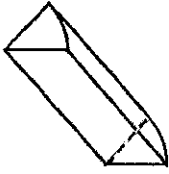


- A)  $1500 \text{ in}^3$
- B)  $500 \text{ in}^3$
- C)  $1375 \text{ in}^3$
- D)  $2500 \text{ in}^3$

24) Line  $a$  is represented by the equation  $2x + 5y = -10$ . Line  $a$  and line  $b$  intersect at the point  $(5, -4)$ . If  $a \perp b$ , what is the equation that represents line  $b$ ?

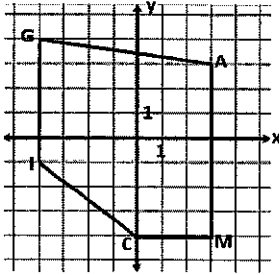
- A)  $-5x + 2y = -33$
- B)  $y = -\frac{2}{5}x - 2$
- C)  $4x - 5y = -10$
- D) None of these

- 25) A prism has a base that is a sector of a circle. The central angle of this sector is  $40^\circ$ . The radius of the circle is 12 inches. If the height of this prism is 10 inches, what is the volume of this prism? (Remember that  $V = Bh$ ).



- A)  $160\pi \text{ in}^3$                       C)  $800\pi \text{ in}^3$   
 B)  $2880\pi \text{ in}^3$                       D)  $2400\pi \text{ in}^3$

- 26) What is the perimeter of polygon MAGIC to the nearest whole number?



- A) 25 units  
 B) 27 units  
 C) 31 units  
 D) 34 units

- 27) Which set of information is true if given the equation of the circle?

A) The equation of Circle A is  $(x - 3)^2 + (y - 4)^2 = 16$ .  
 This means the center of Circle A is  $(-3, -4)$ .

B) The equation of Circle B is  $(x - 12)^2 + (y + 1)^2 = 4$ .  
 This means the radius of Circle B is 4.

C) The equation of Circle C is  $x^2 + y^2 - 2x + 4y - 20 = 0$ .  
 This means the center of Circle C is  $(1, -2)$ .

D) The equation of Circle D is  $(x - 5)^2 + (y + 2)^2 = 4$ .  
 This means that  $x = 4$  is tangent to Circle D.

- 28) A bag of skittles contains 7 red, 3 green, 12 orange, 8 purple, and 5 yellow skittles. A child reaches into this bag and randomly pulls out a skittle and eats it. She then reaches into the bag to grab another skittle and eats it. What is the probability that she has eaten 2 red skittles?

- A)  $\frac{1}{25}$                       B)  $\frac{3}{85}$                       C)  $\frac{6}{175}$                       D)  $\frac{7}{170}$

- 29) What is  $P(\text{kid} \cup \text{no})$  given that the respondent voted no?

	YES	NO
KID	42	8
ADULT	24	26

- A)  $\frac{8}{34}$                       C)  $\frac{13}{17}$   
 B) 0                      D) 1

- 30) Tate rolled a set of dice and recorded the sum. He then threw a fair coin. What is the probability that the dice sum was 10 and the coin landed on tails?

- A)  $\frac{1}{4}$                       B)  $\frac{1}{24}$                       C)  $\frac{1}{12}$                       D) None of these