

**2012-13 ATI-CAS Comprehensive Math Geometry***Comprehensive Benchmark Assessment Series*

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**Instructions:** It is time to begin. The scores of this test will help teachers plan lessons. Carefully, read each item in the test booklet. Select the best answer: A, B, C, or D. Use a pencil. Mark your answer on the ANSWER SHEET. Fill in the bubble next to your answer choice. Make sure the bubble is completely colored. Erase any extra pencil lines or changed answers. You may write on the test booklet unless your teacher gave you scratch paper. Review and check your answers after you have finished the test.



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## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1a.i State precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc. (CCSS: G-CO.1)

- 1) What is defined below?

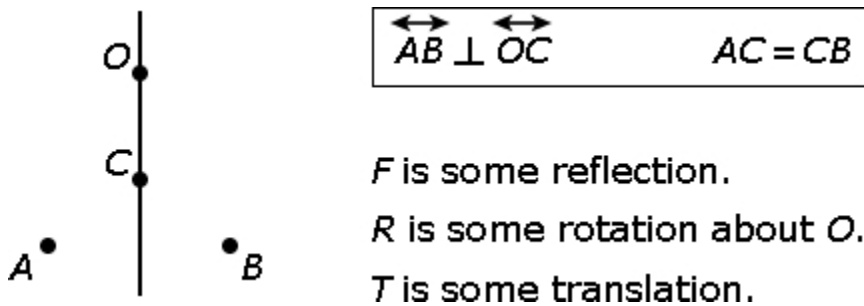
\_\_\_\_\_ : a portion of a line bounded by two points

- A) arc
- B) axis
- C) ray
- ✓ D) segment

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CO-HS.SDG.1a.iii Describe transformations as functions that take points in the plane as inputs and give other points as outputs. (CCSS: G-CO.2)

- 2) A transformation takes point  $A$  to point  $B$ . Which transformation(s) could it be?



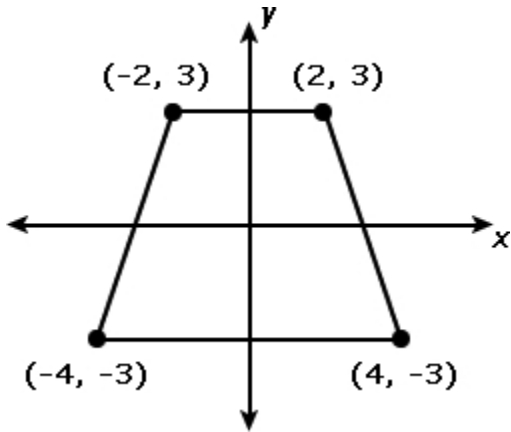
$F$  is some reflection.  
 $R$  is some rotation about  $O$ .  
 $T$  is some translation.

- A)  $F$  only
- B)  $F$  and  $R$  only
- C)  $F$  and  $T$  only
- ✓ D)  $F$ ,  $R$ , and  $T$

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1a.v Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself. (CCSS: G-CO.3)

- 3) Which transformation will place the trapezoid onto itself?

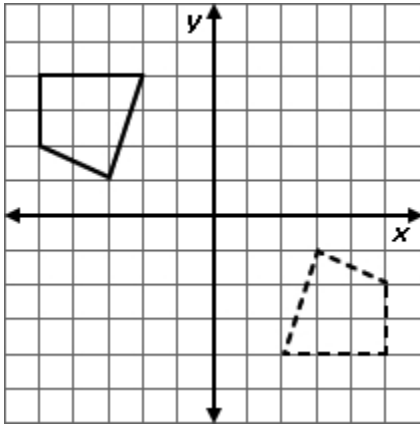


- A) counterclockwise rotation about the origin by  $90^\circ$
  - B) rotation about the origin by  $180^\circ$
  - C) reflection across the  $x$ -axis
  - ✓ D) reflection across the  $y$ -axis
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1a.viii Specify a sequence of transformations that will carry a given figure onto another. (CCSS: G-CO.5)

- 4) Which transformation maps the solid figure onto the dashed figure?

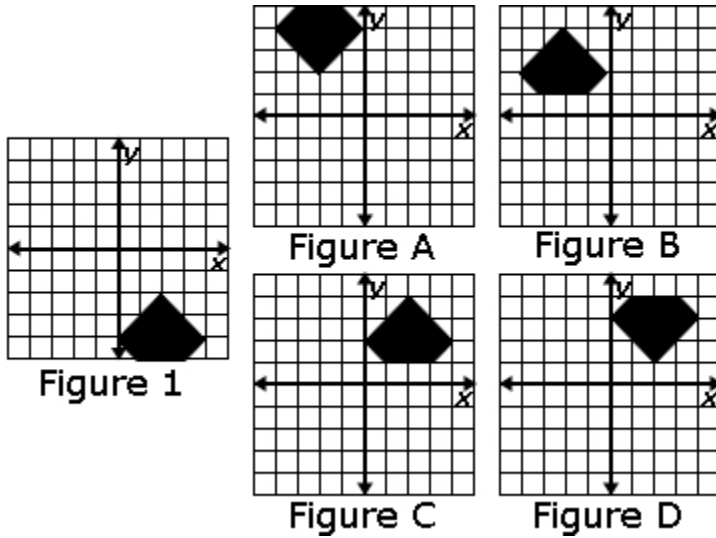


- ✓ A) rotation  $180^\circ$  about the origin
  - B) translation to the right and down
  - C) reflection across the  $x$ -axis
  - D) reflection across the  $y$ -axis
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1b.i Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure. (CCSS: G-CO.6)

- 5) Figure 1 is reflected about the  $x$ -axis and then translated four units left. Which figure results?



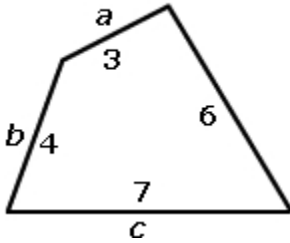
- ✓ A) Figure A
- B) Figure B
- C) Figure C
- D) Figure D

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1b.ii Given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent. (CCSS: G-CO.6)

- 6) It is known that a series of rotations, translations, and reflections superimposes sides  $a$ ,  $b$ , and  $c$  of Quadrilateral  $X$  onto three sides of Quadrilateral  $Y$ . Which is true about  $z$ , the length of the fourth side of Quadrilateral  $Y$ ?

Quadrilateral  $X$



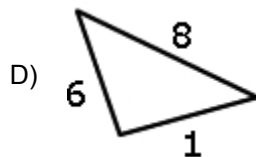
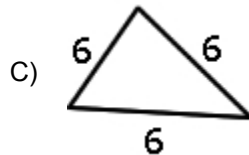
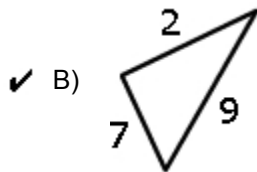
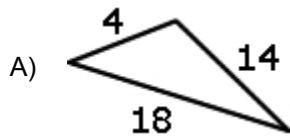
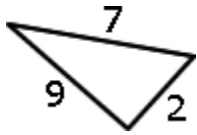
- ✓ A) It must be equal to 6.  
B) It can be any number in the range  $5 \leq z \leq 7$ .  
C) It can be any number in the range  $3 \leq z \leq 8$ .  
D) It can be any number in the range  $0 < z < 14$ .
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1b.iii Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. (CCSS: G-CO.7)

- 7) The triangle below can be subject to reflections, rotations, or translations. With which of the triangles can it coincide after a series of these transformations?

*Figures are not necessarily drawn to scale.*



## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1b.iv Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. (CCSS: G-CO.8)

- 8) Given the information regarding triangles  $ABC$  and  $DEF$ , which statement is true?

$$\angle A \cong \angle D$$

$$\angle B \cong \angle E$$

$$\overline{BC} \cong \overline{EF}$$

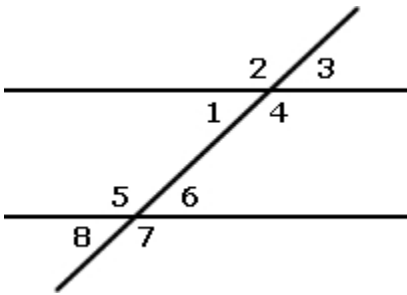
- A) The given information matches the SAS criterion; the triangles are congruent.
  - B) The given information matches the ASA criterion; the triangles are congruent.
  - ✓ C) Angles  $C$  and  $F$  are also congruent; this must be shown before using the ASA criterion.
  - D) It cannot be shown that the triangles are necessarily congruent.
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## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1c.i Prove theorems about lines and angles. (CCSS: G-CO.9)

- 9) Which statements should be used to prove that the measures of angles 1 and 5 sum to  $180^\circ$ ?

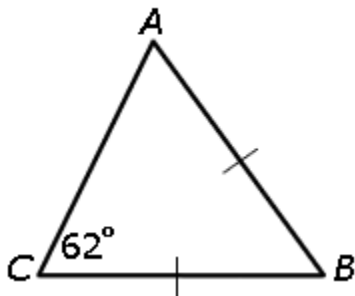


- ✓ A) Angles 1 and 8 are congruent as corresponding angles; angles 5 and 8 form a linear pair.
- B) Angles 1 and 2 form a linear pair; angles 3 and 4 form a linear pair.
- C) Angles 5 and 7 are congruent as vertical angles; angles 6 and 8 are congruent as vertical angles.
- D) Angles 1 and 3 are congruent as vertical angles; angles 7 and 8 form a linear pair.

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CO-HS.SDG.1c.ii Prove theorems about triangles. (CCSS: G-CO.10)

- 10) What is the measure of  $\angle B$  in the figure below?

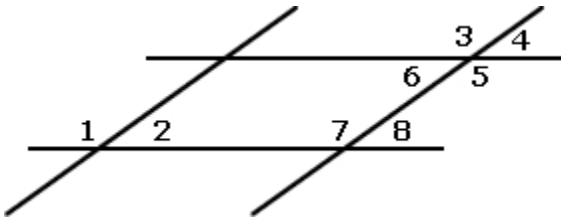


- A)  $62^\circ$
- B)  $58^\circ$
- C)  $59^\circ$
- ✓ D)  $56^\circ$

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1c.iii Prove theorems about parallelograms. (CCSS: G-CO.11)

- 11) Two pairs of parallel line form a parallelogram. Becki proved that angles 2 and 6 are congruent. She is first used corresponding angles created by a transversal and then alternate interior angles. Which pairs of angles could she use?

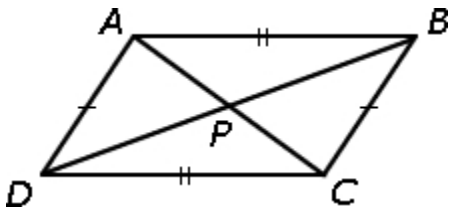


- A) 1 and 2 then 5 and 6
- B) 4 and 2 then 4 and 6
- C) 7 and 2 then 7 and 6
- ✓ D) 8 and 2 then 8 and 6

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CO-HS.SDG.1c.iii Prove theorems about parallelograms. (CCSS: G-CO.11)

- 12) To prove that diagonals of a parallelogram bisect each other, Xavier first wants to establish that triangles  $APD$  and  $CPB$  are congruent. Which criterion and elements can he use?

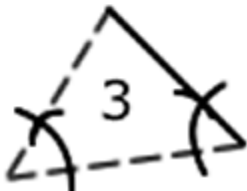


- A) SAS: sides  $AP$  &  $PD$  and  $CP$  &  $PB$  with the angles in between
- B) SAS: sides  $AD$  &  $AP$  and  $CB$  &  $CP$  with the angles in between
- C) ASA: sides  $DP$  and  $PB$  with adjacent angles
- ✓ D) ASA: sides  $AD$  and  $BC$  with adjacent angles

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1d.i Make formal geometric constructions with a variety of tools and methods. (CCSS: G-CO.12)

13) Which triangle was constructed congruent to the given triangle?

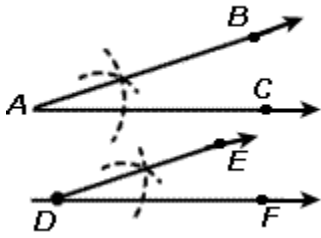


- A) Triangle 1
  - ✓ B) Triangle 2
  - C) Triangle 3
  - D) Triangle 4
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1d.i Make formal geometric constructions with a variety of tools and methods. (CCSS: G-CO.12)

14) What is the first step in constructing congruent angles?

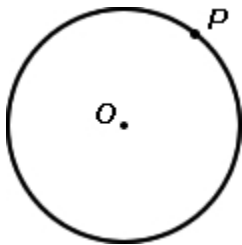


- ✓ A) Draw ray  $DF$ .
- B) From point  $A$ , draw an arc that intersects the sides of the angle at point  $B$  and  $C$ .
- C) From point  $D$ , draw an arc that intersects the sides of the angle at point  $E$  and  $F$ .
- D) From points  $A$  and  $D$ , draw equal arcs that intersect the rays  $AC$  and  $DF$ .

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CO-HS.SDG.1d.ii Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle. (CCSS: G-CO.13)

15) The radius of circle  $O$  is  $r$ . A circle with the same radius drawn around  $P$  intersects circle  $O$  at point  $R$ . What is the measure of angle  $ROP$ ?

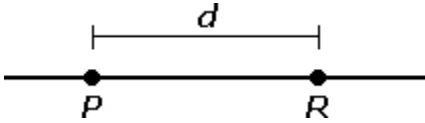


- A)  $30^\circ$
- ✓ B)  $60^\circ$
- C)  $90^\circ$
- D)  $120^\circ$

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.1d.ii Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.  
(CCSS: G-CO.13)

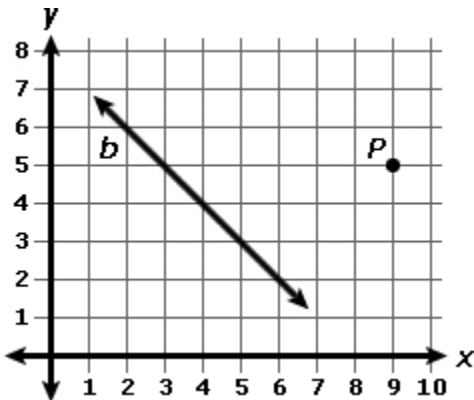
- 16) Carol is constructing an equilateral triangle with  $P$  and  $R$  being two of the vertices. She is going to use a compass to draw circles around  $P$  and  $R$ . What should the radius of the circles be?



- ✓ A)  $d$
- B)  $2d$
- C)  $\frac{d}{2}$
- D)  $d^2$

CO-HS.SDG.2a.i.1 Show that a dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. (CCSS: G-SRT.1a)

- 17) Line  $b$  is defined by the equation  $y = 8 - x$ . If line  $b$  undergoes a dilation with a scale factor of 0.5 and center  $P$ , which equation will define the image of the line?

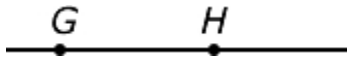


- A)  $y = 4 - x$
- B)  $y = 5 - x$
- C)  $y = 8 - x$
- ✓ D)  $y = 11 - x$

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2a.i.2 Show that the dilation of a line segment is longer or shorter in the ratio given by the scale factor. (CCSS: G-SRT.1b)

- 18)  $GH = 1$ . A dilation with center  $H$  and a scale factor of 0.5 is applied. What will be the length of the image of the segment  $GH$ ?



- A) 0
- ✓ B) 0.5
- C) 1
- D) 2

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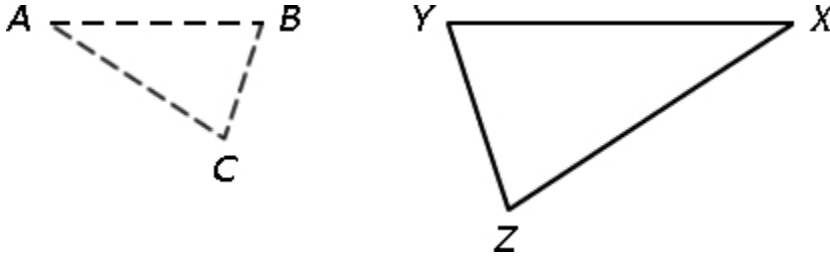
CO-HS.SDG.2a.ii Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar. (CCSS: G-SRT.2)

- 19) When are two triangles considered similar but not congruent?
- A) The distance between corresponding vertices are equal.
  - ✓ B) The distance between corresponding vertices are proportionate.
  - C) The vertices are reflected across the  $x$ -axis.
  - D) Each of the vertices are shifted up by the same amount.
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2a.iii Explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides. (CCSS: G-SRT.2)

- 20) Triangle  $ABC$  was reflected and dilated so that it coincides with triangle  $XYZ$ . How did this transformation affect the sides and angles of triangle  $ABC$ ?

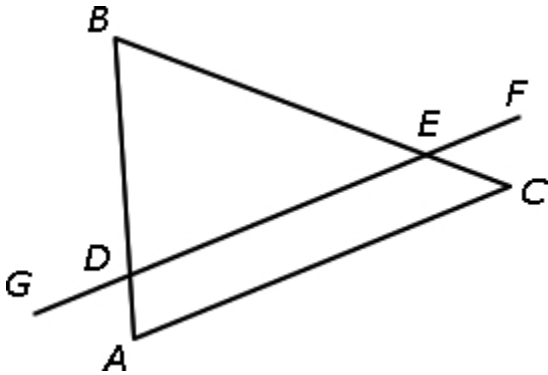


- A) The side lengths and angle measures were multiplied by  $\frac{XY}{AB}$ .
- ✓ B) The side lengths were multiplied by  $\frac{XY}{AB}$ , while the angle measures were preserved.
- C) The angle measures were multiplied by  $\frac{XY}{AB}$ , while the side lengths were preserved.
- D) The angle measures and side lengths were preserved.
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2b.i Prove theorems about triangles. (CCSS: G-SRT.4)

- 21) Lines  $AC$  and  $FG$  are parallel. Which statement should be used to prove that triangles  $ABC$  and  $DBE$  are similar?



- A) Angles  $BDE$  and  $BCA$  are congruent as alternate interior angles.
- B) Angles  $BAC$  and  $BEF$  are congruent as corresponding angles.
- ✓ C) Angles  $BED$  and  $BCA$  are congruent as corresponding angles.
- D) Angles  $BDG$  and  $BEF$  are congruent as alternate exterior angles.

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CO-HS.SDG.2b.ii Prove that all circles are similar. (CCSS: G-C.1)

- 22) Which can be accomplished using a sequence of similarity transformations?

I. mapping circle  $O$  onto circle  $P$  so that  $O_1$  matches  $P_1$

II. mapping circle  $P$  onto circle  $O$  so that  $P_1$  matches  $O_1$



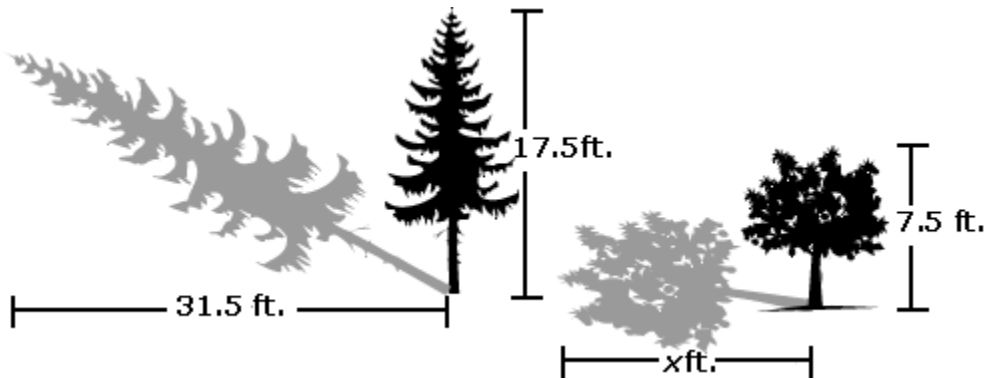
- A) I only
- B) II only
- ✓ C) both I and II
- D) neither I nor II



## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2b.iii Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. (CCSS: G-SRT.5)

23) Given the diagram below, what is the value of  $x$ ?

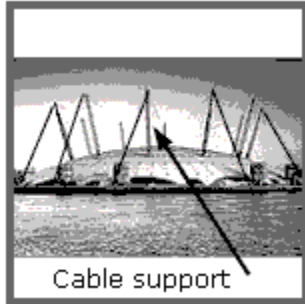


- ✓ A) 13.5
- B) 14.6
- C) 15.5
- D) 16.6

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2b.iii Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. (CCSS: G-SRT.5)

- 24) A scale model of the Millennium Dome in Greenwich, England, was constructed on a scale of 100 meters to 1 foot. The cable supports are 50 meters high and form a triangle with the cables. How high are the cable supports on the scale model that was built?

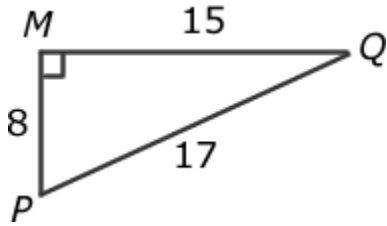


- ✓ A) 0.5 foot
  - B) 1 foot
  - C) 1.5 feet
  - D) 2 feet
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2c.i Explain that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. (CCSS: G-SRT.6)

25) What is the sine ratio of  $\angle P$  in the given triangle?



- A)  $\frac{8}{17}$
- B)  $\frac{8}{15}$
- ✓ C)  $\frac{15}{17}$
- D)  $\frac{15}{8}$

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CO-HS.SDG.2c.ii Explain and use the relationship between the sine and cosine of complementary angles. (CCSS: G-SRT.7)

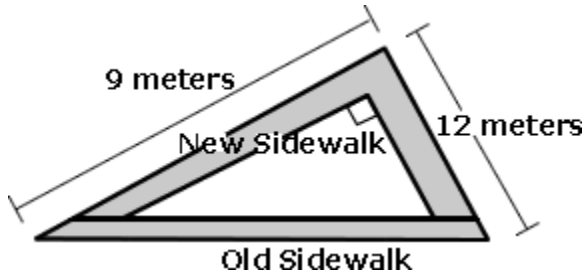
26) Which is equal to  $\sin 30^\circ$ ?

- A)  $\cos 30^\circ$
  - ✓ B)  $\cos 60^\circ$
  - C)  $\sin 60^\circ$
  - D)  $\sin 70^\circ$
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2c.iii Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. \* (CCSS: G-SRT.8)

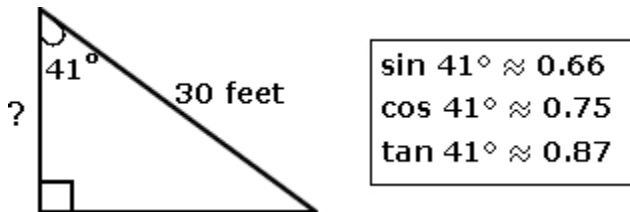
- 27) A new sidewalk was built to expand the flowerbed, as shown in the diagram below. About how many extra meters is the new sidewalk?



- A) 3 meters
- B) 5 meters
- ✓ C) 6 meters
- D) 8 meters

CO-HS.SDG.2c.iii Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. \* (CCSS: G-SRT.8)

- 28) A 30-foot long escalator forms a  $41^\circ$  angle at the second floor. Which is the closest height of the first floor?

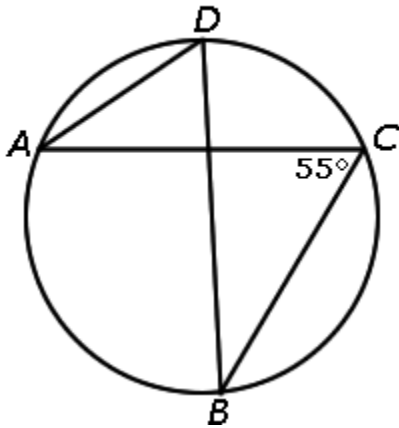


- A) 20 feet
- ✓ B) 22.5 feet
- C) 24.5 feet
- D) 26 feet

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2e.i Identify and describe relationships among inscribed angles, radii, and chords. (CCSS: G-C.2)

29) If  $m\angle C = 55^\circ$ , then what is  $m\angle D$ ?



- A)  $27.5^\circ$
- B)  $35^\circ$
- ✓ C)  $55^\circ$
- D)  $110^\circ$

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CO-HS.SDG.2e.ii Construct the inscribed and circumscribed circles of a triangle. (CCSS: G-C.3)

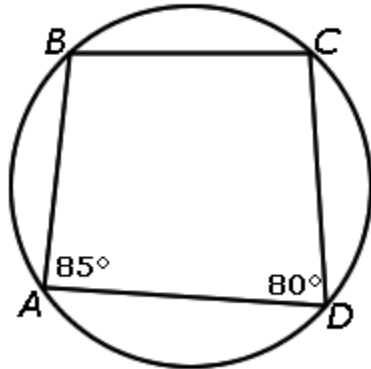
30) The center of the inscribed circle of a triangle has been established. Which point on one of the sides of a triangle should be chosen to set the width of the compass?

- A) intersection of the side and the median to that side
  - B) intersection of the side and the angle bisector of the opposite angle
  - ✓ C) intersection of the side and the perpendicular passing through the center
  - D) intersection of the side and the altitude dropped from the opposite vertex
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2e.iii Prove properties of angles for a quadrilateral inscribed in a circle. (CCSS: G-C.3)

- 31) Quadrilateral  $ABCD$  is inscribed in a circle as shown in the diagram below.



If  $m\angle A = 85^\circ$  and  $m\angle D = 80^\circ$ , what is  $m\angle B$ ?

- A)  $80^\circ$
- B)  $85^\circ$
- C)  $95^\circ$
- ✓ D)  $100^\circ$

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CO-HS.SDG.2e.iii Prove properties of angles for a quadrilateral inscribed in a circle. (CCSS: G-C.3)

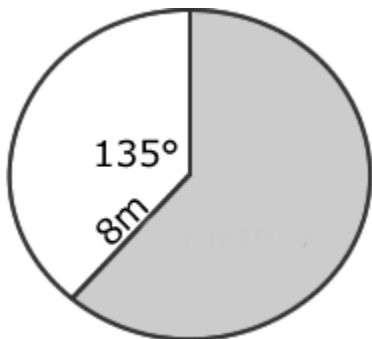
- 32) Quadrilateral  $ABCD$  is inscribed in a circle. Segments  $AB$  and  $BC$  are not the same length. Segment  $AC$  is a diameter. Which must be true?

- A)  $ABCD$  is a trapezoid.
  - B)  $ABCD$  is a rectangle.
  - ✓ C)  $ABCD$  has at least two right angles.
  - D)  $ABCD$  has an axis of symmetry.
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2f.ii Derive the formula for the area of a sector. (CCSS: G-C.5)

33) What is the area of the shaded sector?

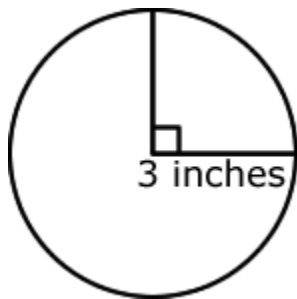


- A)  $5\pi$  square meters
  - B)  $10\pi$  square meters
  - C)  $24\pi$  square meters
  - ✓ D)  $40\pi$  square meters
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2f.ii Derive the formula for the area of a sector. (CCSS: G-C.5)

34) What is the area of the  $90^\circ$  sector?



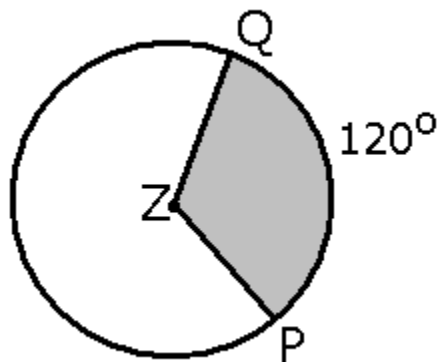
- A)  $\frac{3\pi}{4}$  square inches
  - B)  $\frac{3\pi}{2}$  square inches
  - ✓ C)  $\frac{9\pi}{4}$  square inches
  - D)  $\frac{9\pi}{2}$  square inches
-



## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2f.ii Derive the formula for the area of a sector. (CCSS: G-C.5)

35) What is the area of the shaded sector if the radius of circle Z is 5 inches?

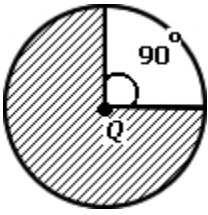


- ✓ A)  $\frac{25\pi}{3}$  square inches
  - B)  $25\pi$  square inches
  - C)  $\frac{25\pi}{4}$  square inches
  - D)  $5\pi$  square inches
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.2f.ii Derive the formula for the area of a sector. (CCSS: G-C.5)

- 36) What is the area of the shaded sector, given circle  $Q$  has a diameter of 10?

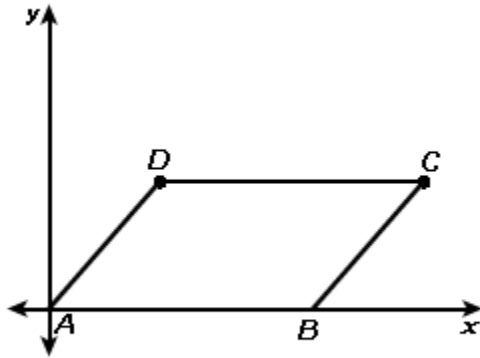


- ✓ A)  $18\frac{3}{4}\pi$  square units
- B)  $25\pi$  square units
- C)  $56\frac{1}{4}\pi$  square units
- D)  $75\pi$  square units
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.3a.ii.1 Use coordinates to prove simple geometric theorems algebraically. (CCSS: G-GPE.4)

37) The diagram shows quadrilateral  $ABCD$ .



Which of the following would prove that  $ABCD$  is a parallelogram?

- ✓ A) slope of  $\overline{AD} = \text{slope of } \overline{BC}$   
length of  $\overline{AD} = \text{length of } \overline{BC}$
  - B) slope of  $\overline{AD} = \text{slope of } \overline{BC}$   
length of  $\overline{AB} = \text{length of } \overline{AD}$
  - C) length of  $\overline{AD} = \text{length of } \overline{BC} = \text{length of } \overline{DC}$
  - D) length of  $\overline{AD} = \text{length of } \overline{BC} = \text{length of } \overline{AB}$
-

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.3a.ii.2 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems. (CCSS: G-GPE.5)

- 38) Which statement is true about the two lines whose equations are given below?

$$3x - 5y = -3$$
$$-2x + y = -8$$

- A) The lines are perpendicular.
- B) The lines are parallel.
- C) The lines coincide.
- ✓ D) The lines intersect, but are not perpendicular.

---

CO-HS.SDG.3a.ii.3 Find the point on a directed line segment between two given points that partitions the segment in a given ratio. (CCSS: G-GPE.6)

- 39) Given  $A(0, 0)$  and  $B(60, 60)$ , what are the coordinates of point  $M$  that lies on segment  $AB$ , such that  $AM:MB = 2:3$ ?

- ✓ A)  $(24, 24)$
- B)  $(24, 36)$
- C)  $(40, 40)$
- D)  $(40, 90)$

---

CO-HS.SDG.3a.ii.4 Use coordinates and the distance formula to compute perimeters of polygons and areas of triangles and rectangles. \* (CCSS: G-GPE.7)

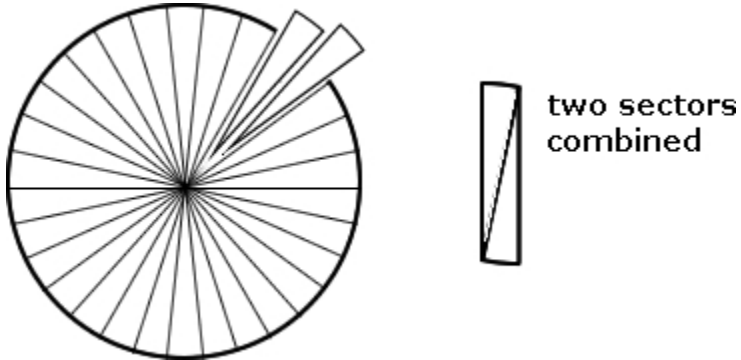
- 40) Two of the vertices of a triangle are  $(0, 1)$  and  $(4, 1)$ . Which coordinates of the third vertex make the area of the triangle equal to 16?

- A)  $(0, -9)$
- B)  $(0, 5)$
- ✓ C)  $(4, -7)$
- D)  $(4, -3)$

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.4a.i Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. (CCSS: G-GMD.1)

- 41) To estimate the area of a circle, Irene divided the circle into 30 congruent sectors. Then she combined pairs of sectors into shapes as shown below. As the shapes resemble rectangles, she treats the shapes as rectangles with the height  $r$  (radius) and the base equal to the length of the curved side of one sector. What is the area of each shape?

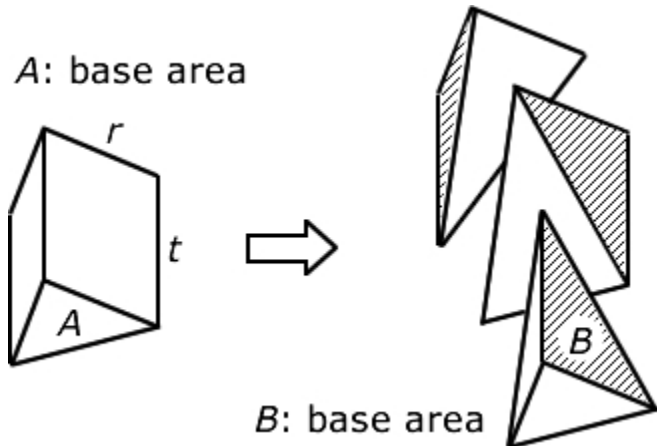


- ✓ A)  $r \frac{\pi r}{15}$   
B)  $r \frac{\pi r}{30}$   
C)  $r \frac{\pi r}{60}$   
D)  $r \frac{\pi r}{120}$

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.4a.i Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. (CCSS: G-GMD.1)

- 42) The prism can be cut into three pyramids with the shaded faces congruent. If the shaded faces are considered as bases, then all three pyramids have the same height,  $h$ . Therefore the pyramids have equal volumes. What is the volume of each pyramid?

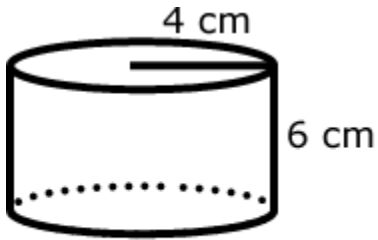


- A)  $\frac{1}{3}Bt$
- B)  $\frac{1}{3}Ah$
- C)  $\frac{1}{3}Ar$
- ✓ D)  $\frac{1}{3}At$

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.4a.ii Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.? (CCSS: G-GMD.3)

43) Find the volume of the cylinder.



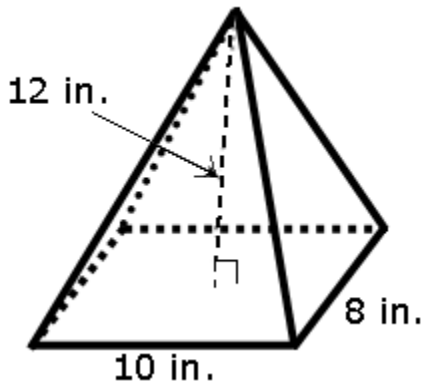
Use 3.14 for  $\pi$ .

- A) 452.2 cubic cm
- ✓ B) 301.4 cubic cm
- C) 150.7 cubic cm
- D) 75.4 cubic cm

---

CO-HS.SDG.4a.ii Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.? (CCSS: G-GMD.3)

44) Find the volume of the rectangular pyramid.



- A) 72 cubic inches
- B) 200 cubic inches
- ✓ C) 320 cubic inches
- D) 960 cubic inches

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.5a.i Use geometric shapes, their measures, and their properties to describe objects. ? (CCSS: G-MG.1)

- 45) The diameter of one side of a 10-foot log is approximately 13 inches. The diameter of the other side of the log is approximately 11 inches. Which is the best way to estimate the volume (in cubic feet) of the log?



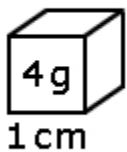
- ✓ A)  $3 \cdot \frac{1}{4} \cdot 10$   
B)  $3 \cdot 1 \cdot 10$   
C)  $3 \cdot 36 \cdot 10$   
D)  $3 \cdot 144 \cdot 10$

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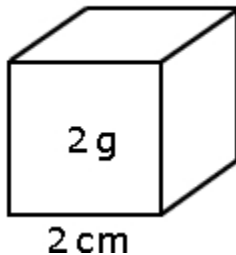
CO-HS.SDG.5a.ii Apply concepts of density based on area and volume in modeling situations. ? (CCSS: G-MG.2)

- 46) Given the size and mass of each of the solid cubes X and Y, how many times is the density of cube X greater than the density of cube Y?

cube X



cube Y



- A) 4  
B) 6  
C) 8  
✓ D) 16



## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.5a.iii Apply geometric methods to solve design problems. ? (CCSS: G-MG.3)

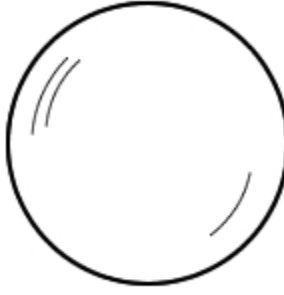
- 47) Stephanie is going to form a clay model of the moon. The model will have a diameter of 2 feet, and the clay she will use comes in containers as described below. What is the least number of containers Stephanie will need in order to complete the model?

Containers



Containers are  $\frac{1}{2}$ -ft. tall and cylinder-shaped, with 1-ft. diameters.

Model of the Moon



← 2 ft. →

- A) 3
- ✓ B) 11
- C) 16
- D) 22

## 2012-13 ATI-CAS Comprehensive Math Geometry

CO-HS.SDG.5a.iii Apply geometric methods to solve design problems. ? (CCSS: G-MG.3)

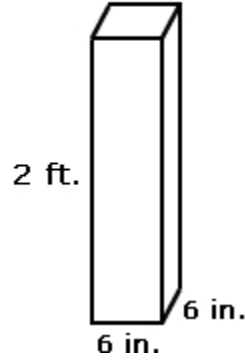
- 48) Lewis is going to form a clay model of a skyscraper. The model will be in the shape of a 2-foot tall prism with a 6-inch by 6-inch base. The clay he will use comes in containers as described below. What is the least number of containers Lewis will need in order to complete the model?

Containers



Containers are  $\frac{1}{2}$ -ft. tall and cylinder-shaped, with 1-ft. diameters.

Skyscraper Model



- A) 1
- ✓ B) 2
- C) 4
- D) 12

## 2012-13 ATI-CAS Comprehensive Math Geometry

### Instructions for Student-Read Offline Assessments

#### Teacher Instructions:

This test packet includes:

- 1) test booklets
- 2) student answer sheets containing student and test identification information

As soon as you receive your test materials, confirm that you have enough testing materials for each student in your class.

You may provide students with scratch paper or students may write in the test booklet.

Allow a few minutes at the beginning of the testing period to review the assessment instructions with students. Students should work through the test items in the test booklet, marking their responses on the answer sheet provided to them. You may answer student questions about the test instructions. Do not answer questions related to the content of the test itself. This includes translating, rephrasing, or adding information to the test question, answers, or related content.

Once the assessment period is over, collect the students' test booklets and answer sheets. Provide to assigned district staff the answer sheets for scanning and the test booklets for proper disposal.