

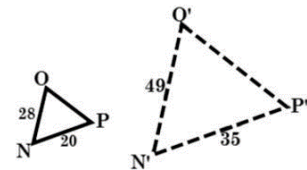
1. A student constructs the image of line segment AB under a dilation with center O, not on the segment, with a scale factor of 3. Which describes the image of the line segment?
- A. The image of line segment AB is a line segment parallel to AB
 - B. The image of line segment AB is a line segment perpendicular to AB
 - C. The image of line segment AB is a line segment passing through point O that intersects AB
 - D. The image of line segment AB is a line segment passing through point O that leaves AB unchanged

2. AB with length 2.4 cm is dilated with a scale factor of 3. What is the new length of AB?
- A. 0.8 cm
 - B. 2.4 cm
 - C. 5.4 cm
 - D. 7.2 cm

3. A right triangle with hypotenuse 5 units and one leg 4 units is dilated with a scale factor of 2. What is the length of the smallest side of the new triangle?
- A. 3 units
 - B. 6 units
 - C. 8 units
 - D. 10 units

4. What is the scale factor of the dilation?

- A. $\frac{7}{4}$
- B. $\frac{4}{7}$
- C. $\frac{7}{5}$
- D. $\frac{5}{7}$

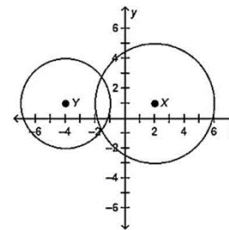


5. $\triangle NOP$ has side lengths of 5 cm, 7 cm, and 9 cm. If $\triangle NOP \sim \triangle RST$, which could be side lengths of $\triangle RST$?

- A. 1 cm, 3 cm, 5 cm
- B. 6 cm, 8.4 cm, 13.5 cm
- C. 7.5 cm, 10.5, 13.5 cm
- D. 15 cm, 17 cm, 19 cm

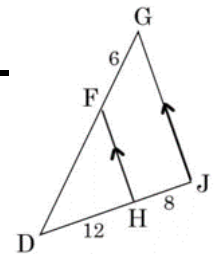
6. What scale factor could be used to dilate circle X to be congruent to circle Y?

- A. $\frac{4}{3}$
- B. $\frac{3}{4}$
- C. $\frac{3}{5}$
- D. $\frac{2}{1}$



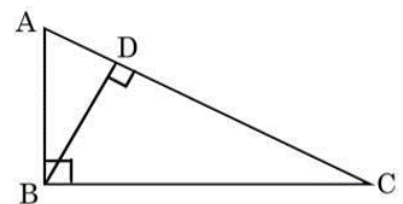
7. In the triangle to the right, what is the length of segment DF?

- A. 9
- B. 10
- C. 12
- D. 20



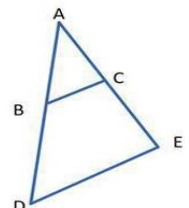
8. Select the 1 triangle that correctly completes the similarity statement? $\triangle ABC \sim \triangle \underline{\hspace{1cm}}$

- A. $\triangle ABD$
- B. $\triangle ADB$
- C. $\triangle BCD$
- D. $\triangle BCA$

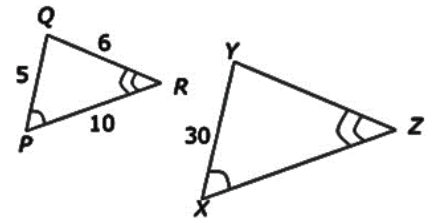


9. Segment BC is a midsegment and triangle ADE. Find the length of BC if $BC = 2x + 14$ and $DE = 6x - 12$.

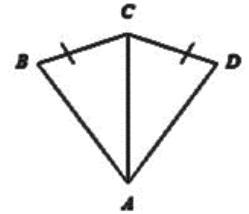
- A. 7
- B. 20
- C. 28
- D. 54



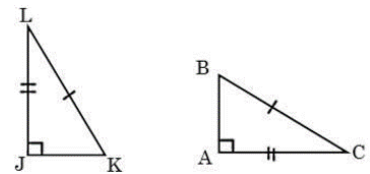
10. Given: $\triangle PQR \sim \triangle XYZ$.
 What is the perimeter of $\triangle XYZ$?
- A. 21
 - B. 63
 - C. 105
 - D. 126



11. What additional information do you need to prove the two triangles are congruent by the SAS Postulate?
- A. $\overline{AB} \cong \overline{AD}$
 - B. $\angle ABC \cong \angle ACD$
 - C. $\angle BCA \cong \angle DCA$
 - D. $\overline{BC} \cong \overline{DC}$



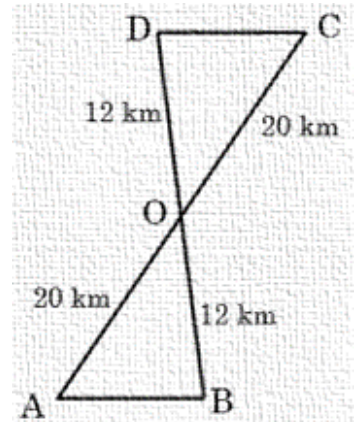
12. Which statement is **TRUE**?
- A. $\triangle ABC \cong \triangle JKL$ by HL
 - B. $\triangle ABC \cong \triangle JKL$ by HL
 - C. $\triangle ABC \cong \triangle JKL$ by SAS
 - D. $\triangle ABC \cong \triangle JKL$ by SSS



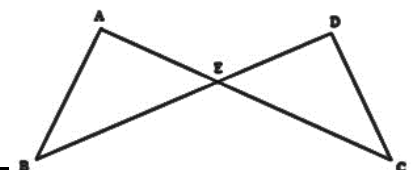
13. Heather is 1.6 meters tall and casts a shadow of 3.5 meters. A barn nearby casts a shadow of 17.5 meters. What is the height of the barn?
- A. 5 m
 - B. 8 m
 - C. 14 m
 - D. 38 m

14. Given: A (3,1), B (4,5), C (2,3), D (-1, -3), E (-5, -4), F (-3, -2)
 Which statement proves $\triangle ABC$ maps onto $\triangle DEF$?
- A. Rotation: $(x,y) \rightarrow (y, -x)$, followed by a Reflection: $(x, y) \rightarrow (x, -y)$.
 - B. Reflection: $(x,y) \rightarrow (-x, y)$, followed by a Rotation: $(x, y) \rightarrow (y, -x)$.
 - C. Translation: $(x,y) \rightarrow (x-4, y)$, followed by a Translation: $(x, y) \rightarrow (x, y-6)$.
 - D. Rotation: $(x,y) \rightarrow (-y, x)$, followed by a Reflection: $(x, y) \rightarrow (x, -y)$.

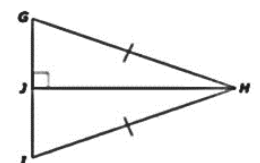
15. A pilot uses triangles to find the angle of elevation, $\angle A$ from the ground to her plane. If $m\angle C = 40^\circ$, how can she find $m\angle A$?
- A. $\triangle ABO \cong \triangle CDO$ by SAS & $\angle A \cong \angle C$ by CPCTC, so $m\angle A = 40^\circ$ by substitution.
 - B. $\triangle ABO \cong \triangle CDO$ by CPCTC & $\angle A \cong \angle C$ by SAS, so $m\angle A = 40^\circ$ by substitution.
 - C. $\triangle ABO \cong \triangle CDO$ by ASA & $\angle A \cong \angle C$ by CPCTC, so $m\angle A = 40^\circ$ by substitution.
 - D. $\triangle ABO \cong \triangle CDO$ by CPCTC & $\angle A \cong \angle C$ by ASA, so $m\angle A = 40^\circ$ by substitution.



16. Point E is the midpoint of line segments AC and BD.
 Which is the **TRUE** statement?
- A. $\triangle ABE \cong \triangle CDE$ by ASA
 - B. $\triangle ABE \cong \triangle CDE$ by AAS
 - C. $\triangle ABE \cong \triangle CDE$ by SAS
 - D. $\triangle ABE \cong \triangle CDE$ by SSS



17. Use the figure to answer the question.
 Which is the **TRUE** statement?
- A. $\triangle GJH \cong \triangle IJH$ by SAS
 - B. $\triangle GJH \cong \triangle IJH$ by HL
 - C. $\triangle GJH \cong \triangle IJH$ by SSS
 - D. $\triangle GJH \cong \triangle HJI$ by HL



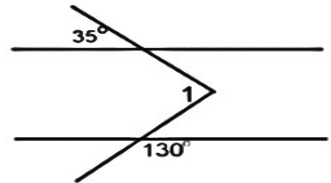
18. Two lines intersect to form two pairs of vertical angles: $\angle 1 = (20x + 7)^\circ$ & $\angle 3 = (5x + 7y + 49)^\circ$ are vertical angles. $\angle 2 = (3x - 2y + 30)^\circ$ & $\angle 4$ are vertical angles.

What are the values of x and y and the measure of $\angle 1$ & $\angle 2$?

- A. $x = 6; y = 10; m\angle 1 = 127^\circ; m\angle 2 = 28^\circ$
- B. $x = 8; y = 11; m\angle 1 = 167^\circ; m\angle 2 = 13^\circ$
- C. $x = 5; y = 5; m\angle 1 = 107^\circ; m\angle 2 = 73^\circ$
- D. $x = 7; y = 9; m\angle 1 = 147^\circ; m\angle 2 = 33^\circ$

19. For two parallel lines and a transversal, $\angle 1$ and $\angle 2$ are same-side interior angles, $\angle 2$ and $\angle 3$ are vertical angles, $\angle 3$ and $\angle 4$ are alternate exterior angles. Which classification best describes the relationship between $\angle 2$ and $\angle 4$?

- A. Adjacent
- B. Corresponding
- C. Alternate Interior
- D. Vertical

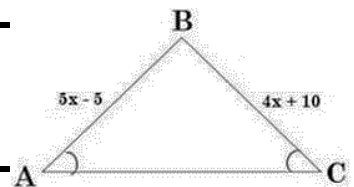


20. What is $m\angle 1$? (Hint: Draw a line parallel to the given parallel lines.)

- A. $m\angle 1 = 95^\circ$
- B. $m\angle 1 = 80^\circ$
- C. $m\angle 1 = 85^\circ$
- D. $m\angle 1 = 75^\circ$

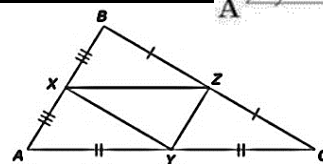
21. What is the length of AB ?

- A. 5
- B. 15
- C. 30
- D. 70



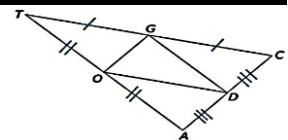
22. Given: $BC = 3x - 1$ and $XY = 2x - 3$. What is the length of XY ?

- A. 5 units
- B. 7 units
- C. 14 units
- D. 28 units



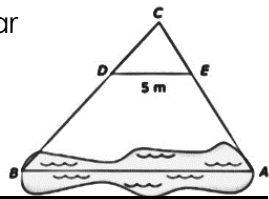
23. If $AD=5$, $AT = 18$, and $CT = 22$, find the perimeter of $\triangle DOG$?

- A. 25
- B. 33
- C. 40
- D. 50



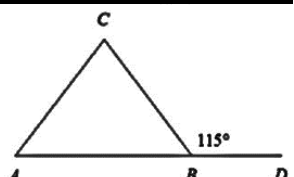
24. A surveyor locates points $A, B, C, D,$ and E of a pond. Triangle CDE is similar to Triangle CBA . $CD=4$ and $CB=12$. Using the lengths measured, what is the length of AB to the nearest meter?

- A. 10 meters
- B. 12 meters
- C. 15 meters
- D. 18 meters



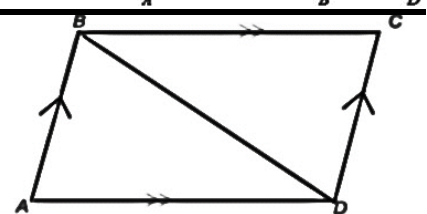
25. Two Galaxy systems, Tauri and M77, represented by points A and B , are equidistant from Earth, represented by point C . What is $m\angle A$?

- A. 65°
- B. 115°
- C. 50°
- D. 77°



26. Given: $ABCD$ is a parallelogram. Prove: $\angle A \cong \angle C; \angle B \cong \angle D$
What is the reason for Step 2 in this incomplete proof?

- A. Definition of parallelogram
- B. When parallel lines are cut by a transversal, alternate interior angles are congruent.
- C. When parallel lines are cut by a transversal, corresponding angles are congruent.
- D. Corresponding parts of congruent triangles are congruent.



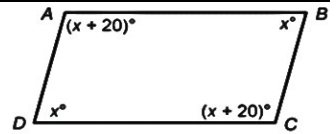
Statements	Reasons
1. $AB \parallel DC; AD \parallel BC$	Definition of Parallelogram
2. $\angle ADB \cong \angle CBD$	

27. Given quadrilateral ABCD with $AB \cong CD$; $BC \cong DA$, and $AC \cong BD$. Which of the following is correct concerning quadrilateral ABCD?

- A. Opposite sides are congruent, so ABCD is a parallelogram. Diagonals are congruent, so ABCD is a rectangle. Two consecutive sides are not necessarily congruent, so ABCD is NOT a square.
- B. Opposite sides are congruent, so ABCD is a rhombus. Diagonals are congruent, so ABCD is a rectangle. A quadrilateral that is a rhombus and a rectangle is a square, so ABCD is a square.
- C. Opposite sides are congruent, so ABCD is a parallelogram. Diagonals are congruent, so ABCD is a rhombus. One angle is not a right angle, so ABCD is NOT a square.
- D. The conclusion is valid without any more information needed. ABCD is a square.

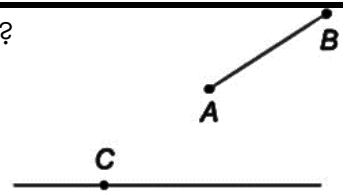
28. In quadrilateral ABCD, $AB \cong DC$ and $AD \cong BC$. Find the $m\angle D$.

- A. 180°
- B. 80°
- C. 40°
- D. 100°



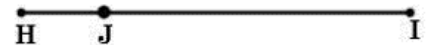
29. Thinking Constructions: What is the first step to copy AB onto the line?

- A. Use a straightedge to draw AB so it intersects the other line.
- B. Open a compass to the distance of AB.
- C. Use a ruler to measure AB.
- D. Use a straightedge to draw AB.



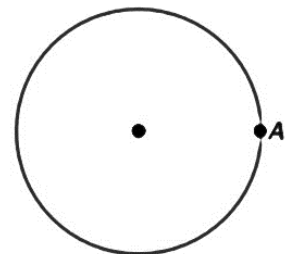
30. Which step should be first to construct a line perpendicular to HJ at point J ?

- A. Place the compass on point H , set its width to less than HJ , draw two arcs on both sides of H .
- B. Place the compass on point J , set its width to less than HJ , draw two arcs on both sides of J .
- C. Place the compass on point J , set its width to less than HJ , draw a circle that will intersect the segment in two places.
- D. Place the compass on point J , set its width to more than JH , draw a circle around the segment HJ .



31. What is the first step when inscribing a regular hexagon in the circle?

- A. Set the compass to any distance. Then place the point of the compass at A and draw an arc that passes through any point on the circle.
- B. Place the point of the compass at any point on the circle & draw an arc that passes through point A .
- C. Open the compass to the radius of the circle.
- D. Draw the diameter of the circle.



32. Given $\triangle PQR \cong \triangle XYZ$, which statement is **NOT** true?

- A. $PR \cong XZ$
- B. $YZ \cong QR$
- C. $RQ \cong ZX$
- D. $ZY \cong RQ$

33. Triangle BCD has been dilated to create triangle B'C'D'.

(NOTE: Your teacher will score your response to this question using a 2-point rubric.)

- **Part A:** What is the scale factor that created $\triangle B'C'D'$?
- **Part B:** What is the similarity ratio of the areas from the pre-image to the image?

