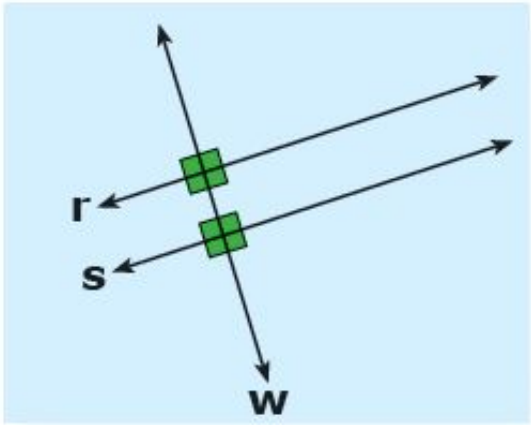
Geometry
Diagnostic Test

Rules

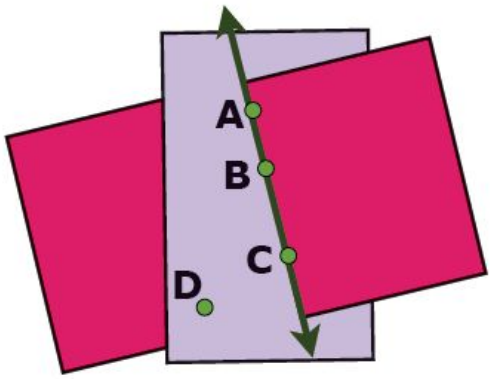
- This diagnostic test consists of questions from all chapters of the course. If the student scores at least 90% in this test, then the student can skip this course.Signup for the next course.
- If the student scored less than 90% of this test, then you should join this course.
- The student should try to answer all of the questions without a calculator and without any help. No time limit and no negative scoring.
- Each question carries 1 point. Total number of answers are 60. You should score at least 54out of 60 to score 90% or above.
- Answers are provided at end of test. Print this test if possible but keep the answer sheet away until end of test.

Write Parallel or perpendicular.

1. r _____ s
2. w _____ s
3. w _____ r



Use the figure to the right to answer questions



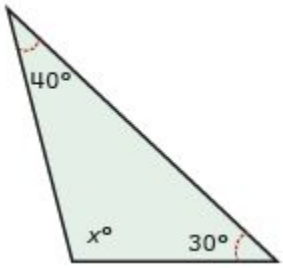
4. What is the intersection of these two planes?

_____

5. Which three points determine the purple plane?

_____

6. find the missing angle



7. What type of triangle has three angles each with the same measure?

_____

8. Find the supplement of the complement of 45°.

_____

Use your *thinking skills* to find the missing angles and record below. Figures are ***not*** to scale, so do not measure.

9 a =

10 b =

11 c =

12 d =

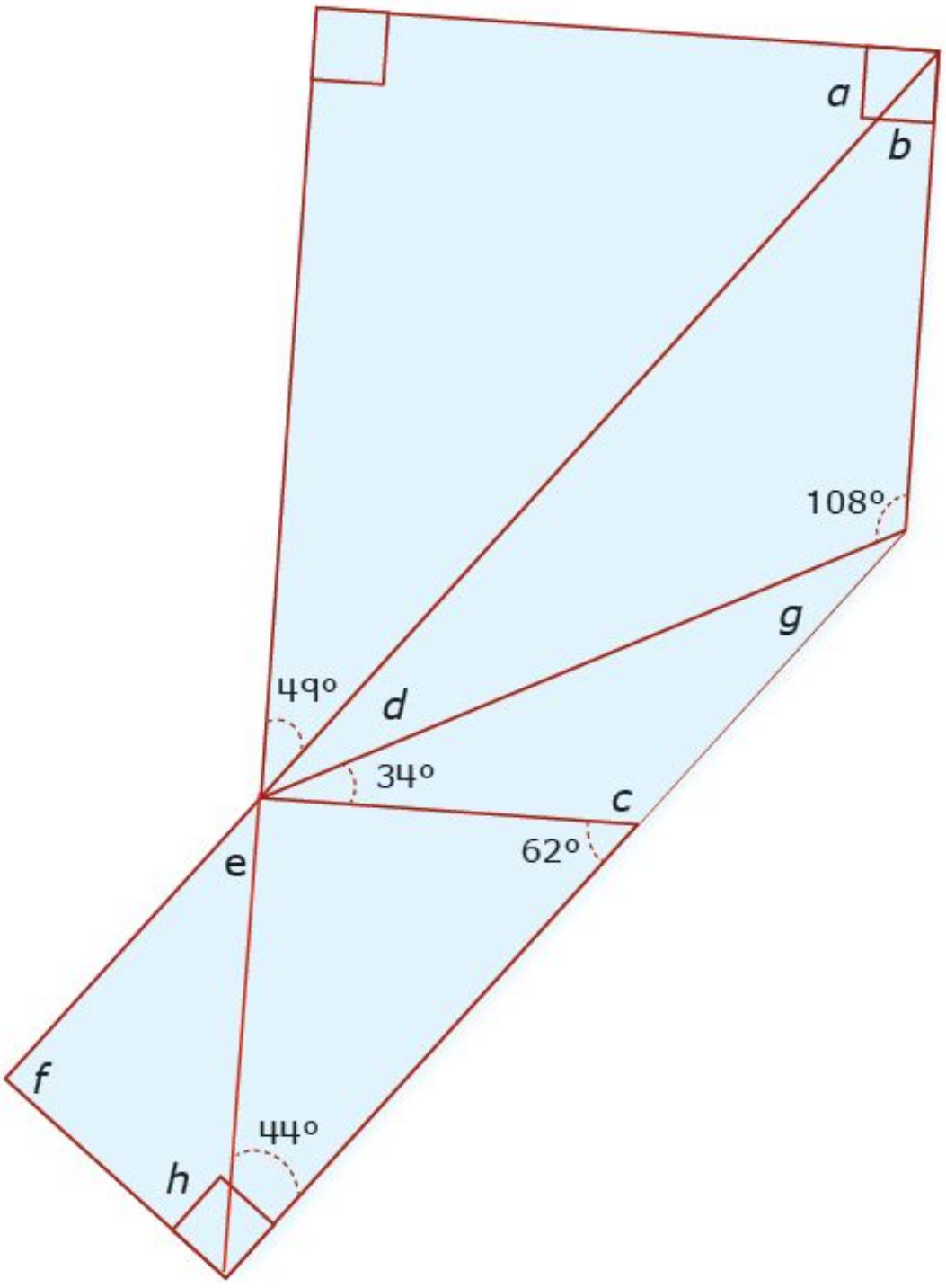
13 e =

14 f =

15 g =

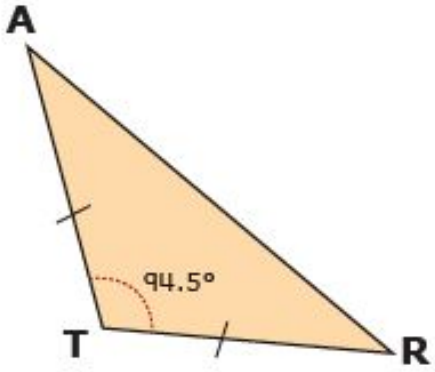
16 h =

17 i =



18 $m\angle A =$ _____

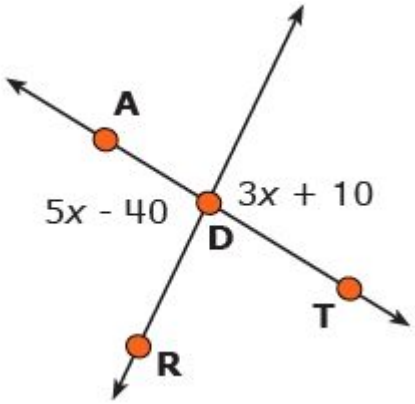
19 $m\angle R =$ _____



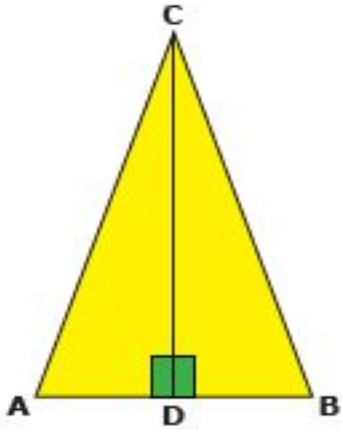
20 $x =$ _____

21 $m\angle ADR =$ _____

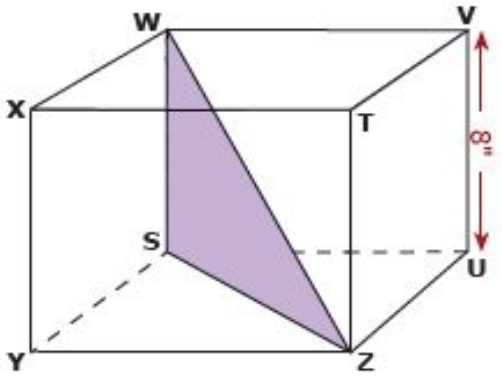
22 $m\angle RDT =$ _____



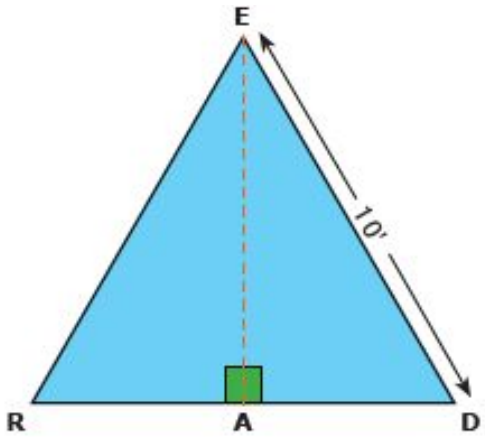
23 ΔABC is isosceles and **CD** = 12 ft. $\overline{CD}$ is the **perpendicular bisector** of $\overline{AB}$. If **AB** = 10 ft, find the perimeter of ΔABC.



24 This cube has a side of 8 in. Find the distance from **W** to Z. Round your answer to the nearest inch. Hint: Find **SZ** first.



25 Δ**RED** is equilateral. **DE** = 10 in. Find its **EA** (**ALTITUDE**).



26 What is the sum of the measures of all the interior angles in a chilliagon?

Use Always (**A**), Sometimes (**S**), Never (**N**) next to each of the statements about quadrilaterals.

27 _____ Quadrilaterals are polygons.

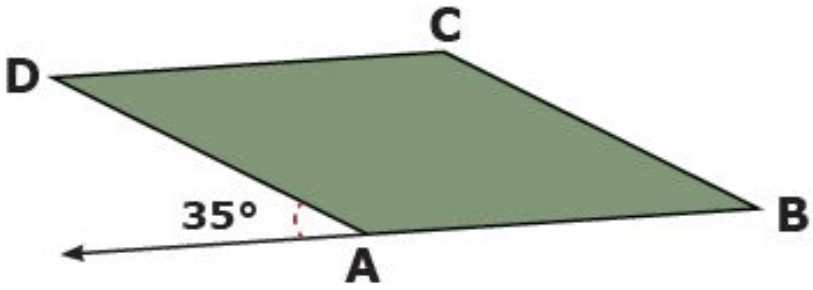
28 _____ Trapezoids are parallelograms.

29 _____ Opposite sides of a parallelogram are parallel.

30 _____ Rhombuses are squares.

31 _____ Squares are rectangles.

Find the missing angles of parallelogram **ABCD** if the exterior angle shown is 35°. Figure ***not*** to scale.



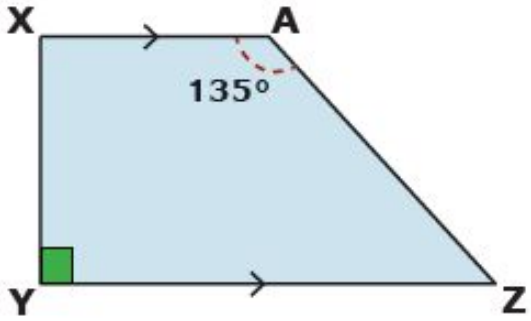
32 ∠**DAB** = _____

33 m∠**D** = _____

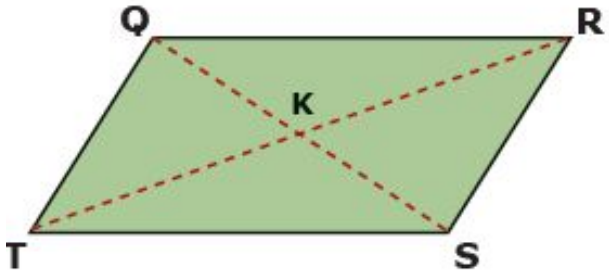
34 m∠**B** = _____

35 m∠**C** = _____

36 Trapezoid **XYZA** has a right angle at **Y**. Find the missing measure of ∠**Z**.



37 In parallelogram **QRST**, diagonal **TR** and diagonal **QS** intersect at point **K**. If **TK** = $2x + 25$ and **RK**= $x + 95$, find **TR**.

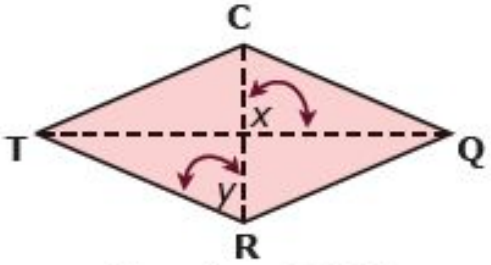


Equation:

TR = _____

38 x =

y =



Rhombus **CQRT**

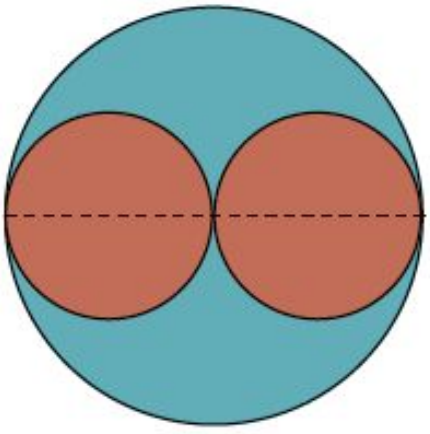
m∠**TCQ** = 150°

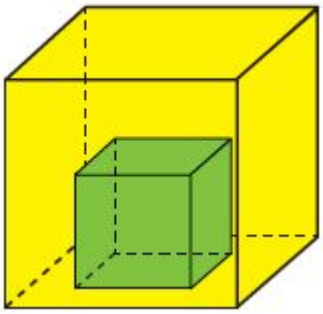
39 The perimeter of a regular nonagon is 315 in. Find one side.

40 Dave has a photograph of a fish he caught in Lake Ontario. The outside of the wooden frame is 14 in. by 12 in., and the picture is 10 in. by 8 in. Find the area of the wooden frame.

41 The perimeter of an isosceles trapezoid is 76 meters. The bases are 20 meters and 30 meters. Draw the trapezoid, then find the length of its two missing sides and area.

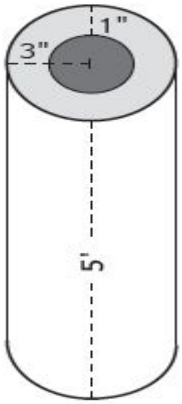
42 Two congruent circles are inside a larger circle and **tangent** to each other as shown below. If the larger circle has a diameter of 12 units, find the area inside the larger circle that is ***not*** taken up by the smaller circles. Leave your answer in terms of π.





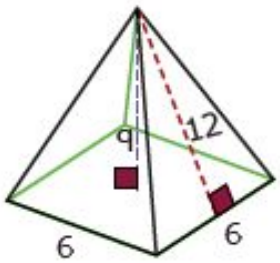
43 A cube is inside another cube. The inner cube has a side of 2 inches. and the outside cube has a side of 3 inches. Find the volume that is left after removing the inside cube from the outer cube.

44 A pipe has a thickness of 1 inch and an ALTITUDE of 5 feet. Find its volume. Use 3.14 for π.



45 If the volume of a sphere is 36π cubic feet, find its radius.

46 Find the volume and the surface area of this rectangular pyramid. The height of the pyramid is 9 units.



Graph Δ**FGH**. The vertices are **F**(-4,-7), **G**(-3,-1), and **H**(-2,-7).

Use the graph from the next page if needed

Answer the following.

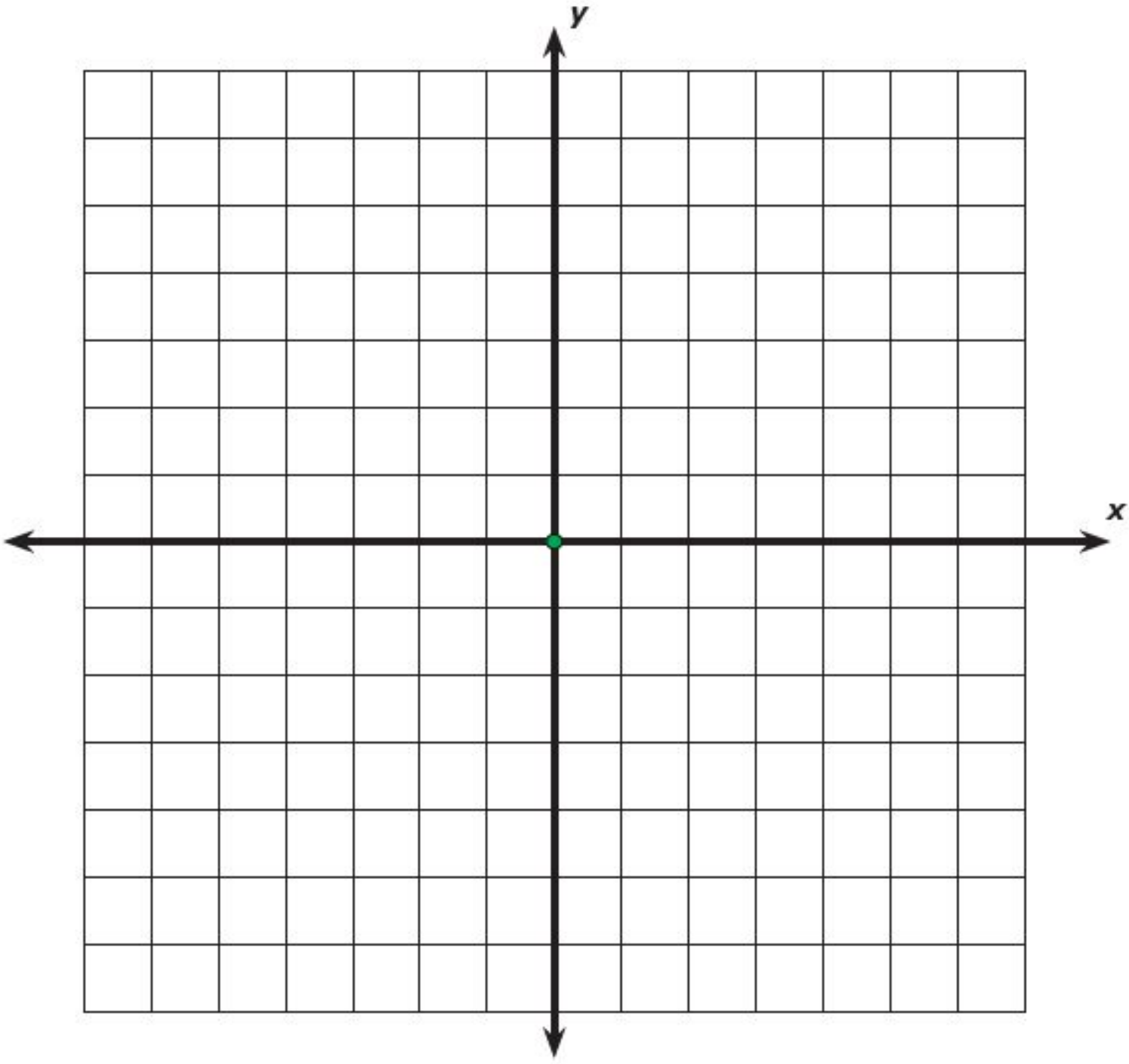
47 What is the most specific name for this triangle? _____

48 What quadrant is Δ**FGH** in? _____

49 Perform the following transformation and label the triangle **F'G'H'**. $(x,y) \rightarrow (x + 7, y + 1)$

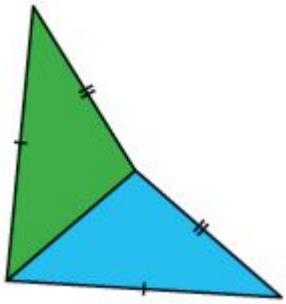
Reflect **F'G'H'** in the *x*-axis. What are the coordinates of **F"G"H"**.

50 **F"** = _____, **G"** _____, **H"** _____.


y
x

Are these triangles congruent? Write Yes or No. If Yes, then give a reason **SSS**, **SAS**, **ASA**, or **AAS**. Rely on the information given.

51



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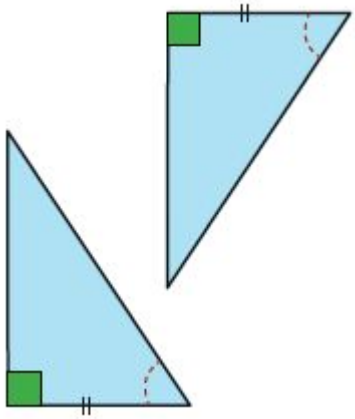

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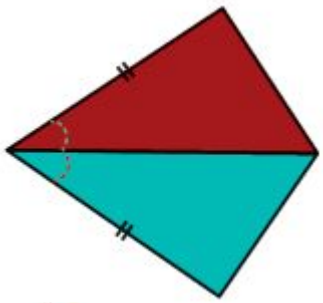

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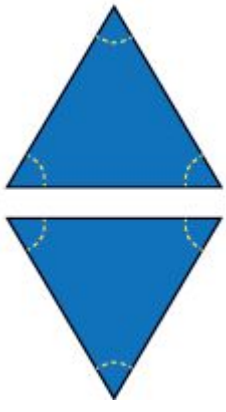
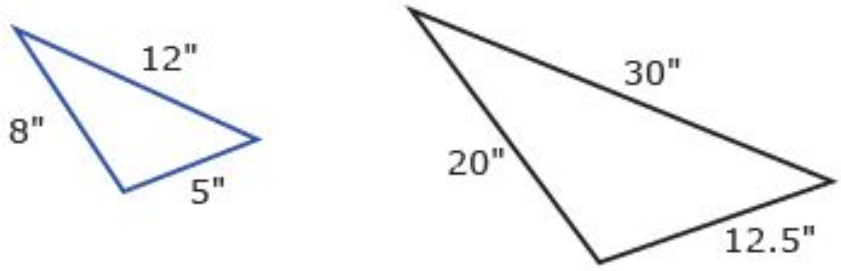


55 Are these two triangles similar? Explain your thinking.



On the following coordinate plane, graph segment $\overline{\mathbf{AB}}$ with endpoints **A**(-3,1) and **B**(3,4) and also graph segment $\overline{\mathbf{DE}}$ with endpoints **D**(-4,-3) and **E**(2,0).

56 Find the slope of $\overline{\mathbf{AB}}$. _____ (reduce)

57 Find the slope of $\overline{\mathbf{DE}}$. _____ (reduce)

Write the equation of a line that passes through **A**(-7,8) and **B**(-6,5).

58 Find the slope. _____

59 Write it in point/slope form using point **B**. _____

60 Write it in slope/intercept form. _____

Answer Keys

1. parallel
2. perpendicular
3. perpendicular
4. $\overleftrightarrow{AC}$ (or $\overleftrightarrow{AB}$, or $\overleftrightarrow{BC}$, which are the same lines)
5. Plane ABD
6. 110 degrees
7. Equilateral Triangle
8. 135 degrees
9. 41°
10. 49°
11. 118°
12. 23°
13. 49°
14. 85°
15. 28°
16. 46°
17. 74°
18. 42.75°
19. 42.75°
20. 25
21. 85°
22. 95°
23. 36 ft

Answer Keys

24. 14”
25. $5\sqrt{3}$"
26. 179,640°
27. A
28. N
29. A
30. S
31. A
32. 145°
33. 35°
34. 35°
35. 145°
36. 45°
37. Equation: $2x + 25 = x + 95$; TR = 330 units (since $x = 70$).
38. X = 90° y = 75°
39. 35”
40. 88 sq in
41. area= 300 sqm, sides 13 m, height=12m
42. 18π sq units
43. 19 cu in
44. 942 cu in
45. 3’

Answer Keys

46. Volume = 108 cu units, SA = 180 cu units
47. Isoceles triangle
48. III
49. F′ (3, −6); G′ (4, 0); H′ (5, −6)
50. F″ (3, 6); G″ (4, 0); H″ (5, 6)
51. Yes, SSS
52. Yes, ASA
53. Yes, SAS
54. No, AAA
55. Yes, these triangles are similar since their corresponding sides are in proportion. The scale factor is 2.5.
56. ½
57. ½
58. M = -3
59. $y - 5 = -3(x + 6)$
60. $y = -3x - 13$