Geometry - Unit 6 Review Sheet 😉

Test Topics:

- Similarity Proofs
  - AA (formal 2 column Proofs)
  - SAS and SSS proofs
- Similar Figures
  - Side splitter (PROPORTIONS! PROPORTIONS! PROPORTIONS!)
  - Midsegment
  - Ratio of areas and perimeters compared to sides
  - Similarity with Altitudes in Right Triangles (altitude and leg rule)
- Dilations
  - Constructing dilated figures
  - Dilations of lines and points

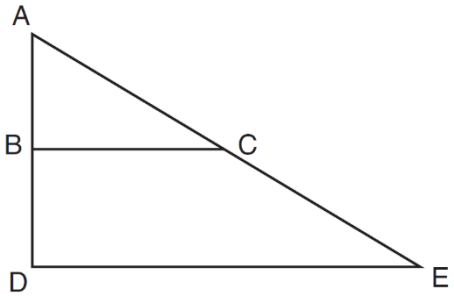
1. A triangle is dilated by a scale factor of 3 with the center of dilation at the origin. Which statement is true?

1) The area of the image is nine times the area of the original triangle.
2) The perimeter of the image is nine times the perimeter of the original triangle.
3) The slope of any side of the image is three times the slope of the corresponding side of the original triangle.
4) The measure of each angle in the image is three times the measure of the corresponding angle of the original triangle.

2. If $\triangle ABC$ is dilated by a scale factor of 3, which statement is true of the image $\triangle A'B'C'$?

1) $3A'B' = AB$
2) $B'C' = 3BC$
3) $m\angle A' = 3(m\angle A)$
4) $3(m\angle C') = m\angle C$

3. The image of $\triangle ABC$ after a dilation of scale factor *k* centered at point *A* is $\triangle ADE$, as shown in the diagram below.

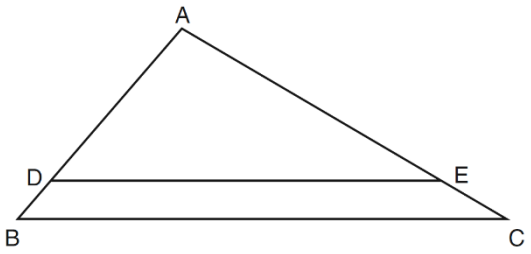


Which statement is always true?

1) $2AB = AD$
2) $\overline{AD} \perp \overline{DE}$
3) $AC = CE$
4) $\overline{BC} \parallel \overline{DE}$

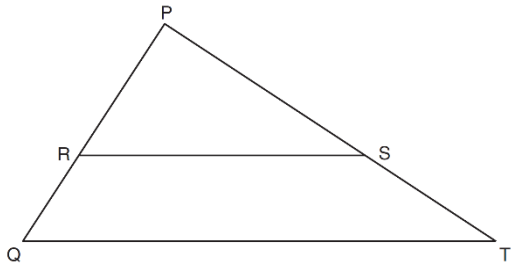
4. In the diagram of $\triangle ABC$ shown below, $\overline{DE} \parallel \overline{BC}$. If $AB = 10$, $AD = 8$, and $AE = 12$, what is the length of $\overline{EC}$?

1) 6
2) 2
3) 3
4) 15

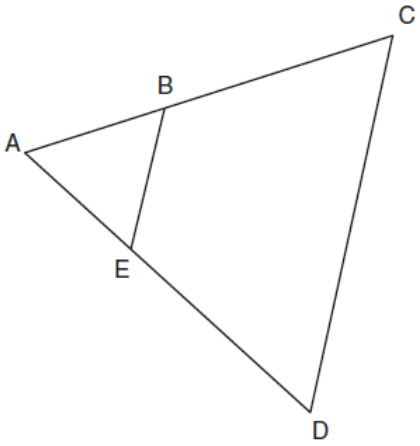


5. Triangle *PQT* with $\overline{RS} \parallel \overline{QT}$ is shown below. If $PR = 12$, $RQ = 8$, and $PS = 21$, what is the length of $\overline{PT}$?

1) 14
2) 17
3) 35
4) 38

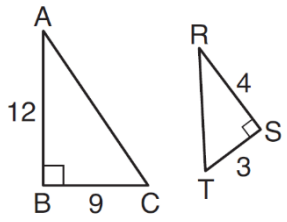


6. In the diagram below of $\triangle ACD$, *E* is a point on $\overline{AD}$ and *B* is a point on $\overline{AC}$, such that $\overline{EB} \parallel \overline{DC}$. If $AE = 3$, $ED = 6$, and $DC = 15$, find the length of $\overline{EB}$.

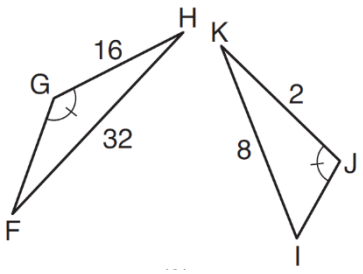


7. Using the information given below, which set of triangles can *not* be proven similar?

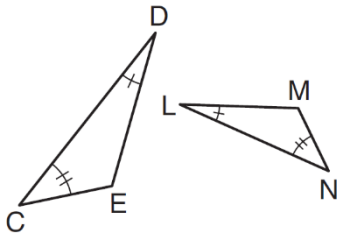
1)



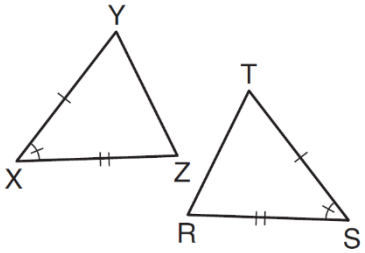
3)



2)

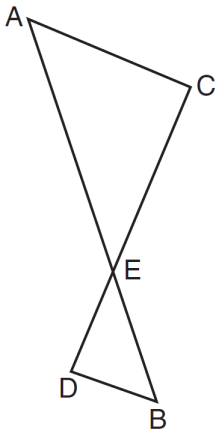


4)



8. As shown in the diagram below, $\overline{AB}$ and $\overline{CD}$ intersect at E, and $\overline{AC} \parallel \overline{BD}$.

Given $\triangle AEC \sim \triangle BED$, which equation is true?



1) $\frac{CE}{DE} = \frac{EB}{EA}$

2) $\frac{AE}{BE} = \frac{AC}{BD}$

3) $\frac{EC}{AE} = \frac{BE}{ED}$

4) $\frac{ED}{EC} = \frac{AC}{BD}$

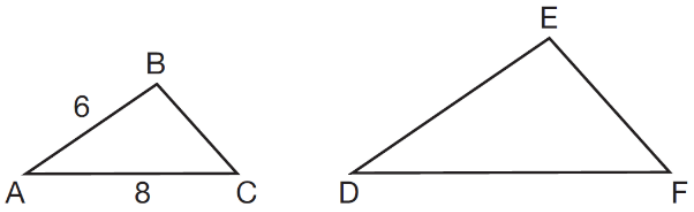
9. In the diagram below, $\triangle ABC \sim \triangle DEF$. If $AB = 6$ and $AC = 8$, which statement will justify similarity by SAS?

1) $DE = 9$, $DF = 12$, and $\angle A \cong \angle D$

2) $DE = 8$, $DF = 10$, and $\angle A \cong \angle D$

3) $DE = 36$, $DF = 64$, and $\angle C \cong \angle F$

4) $DE = 15$, $DF = 20$, and $\angle C \cong \angle F$



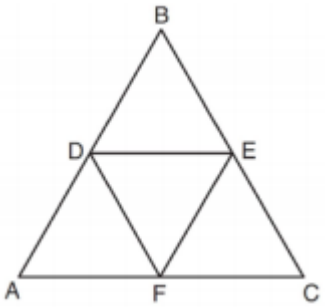
10. In the diagram below, the vertices of DEF are the midpoints of the sides of equilateral triangle ABC, and the perimeter of ABC is 36 cm. What is the length, in centimeters, of EF?

1) 6

2) 12

3) 18

4) 4



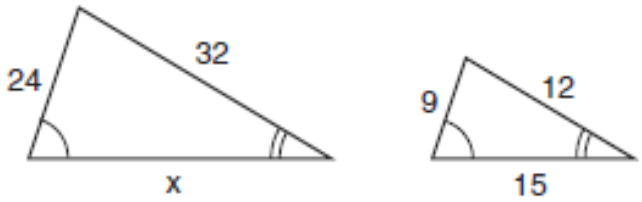
11. The accompanying diagram shows two similar triangles. Which proportion could be used to solve for x?

1) $\frac{x}{24} = \frac{9}{15}$

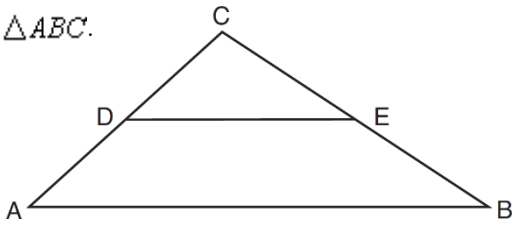
2) $\frac{24}{9} = \frac{15}{x}$

3) $\frac{32}{x} = \frac{12}{15}$

4) $\frac{32}{12} = \frac{15}{x}$



12. In the diagram below, $\overline{DE}$ joins the midpoints of two sides of $\triangle ABC$.



Which statement is *not* true?

1) $CE = \frac{1}{2}CB$

2) $DE = \frac{1}{2}AB$

3) area of $\triangle CDE = \frac{1}{2}$ area of $\triangle CAB$

4) perimeter of $\triangle CDE = \frac{1}{2}$ perimeter of $\triangle CAB$

13. As shown in the diagram below, $\triangle ABC \sim \triangle DEF$, $AB = 7x$, $BC = 4$, $DE = 7$, and $EF = x$.

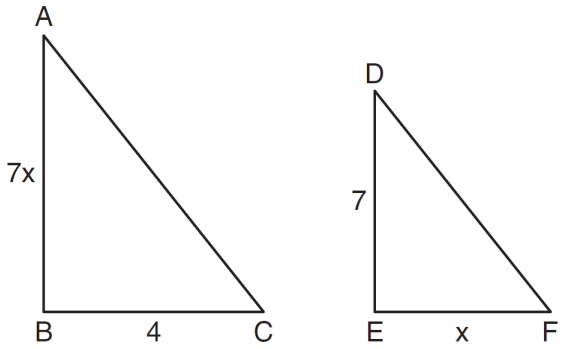
What is the length of $\overline{AB}$?

1) 28

2) 2

3) 14

4) 4



14. A triangle has sides whose lengths are 5, 12, and 13. A similar triangle could have sides with lengths of

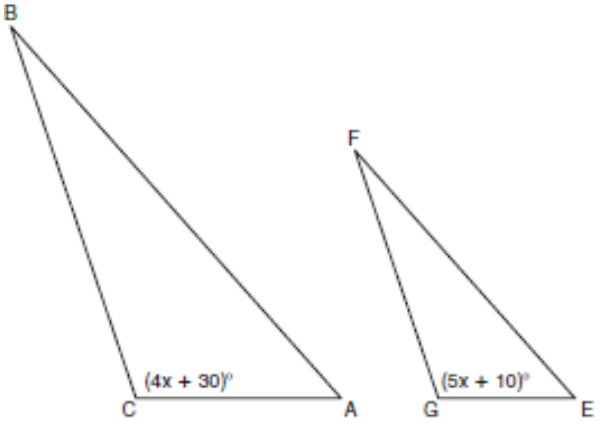
1) 3, 4, and 5

2) 6, 8, and 10

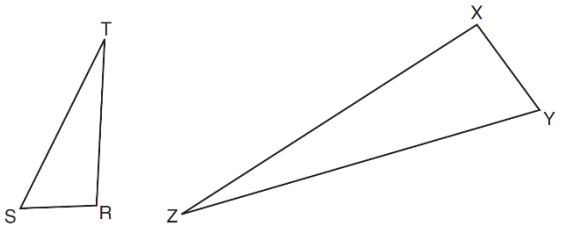
3) 7, 24, and 25

4) 10, 24, and 26

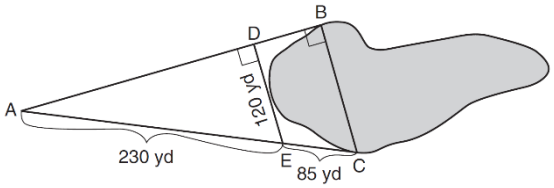
15. In the diagram below, $\triangle ABC \sim \triangle EFG$, $m\angle C = 4x + 30$, and $m\angle G = 5x + 10$. Determine the value of x.



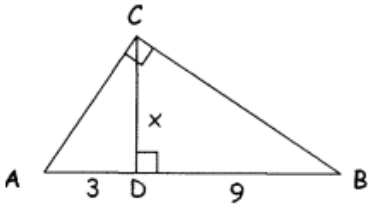
16. Triangles *RST* and *XYZ* are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \cong \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.



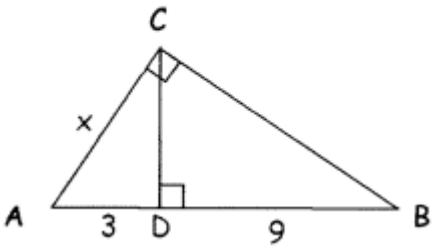
17. To find the distance across a pond from point *B* to point *C*, a surveyor drew the diagram below. The measurements he made are indicated on his diagram. Use the surveyor's information to determine and state the distance from point *B* to point *C*, to the *nearest yard*.



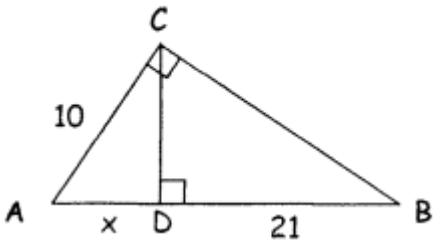
18. If AD = 3 and DB = 9, find CD.



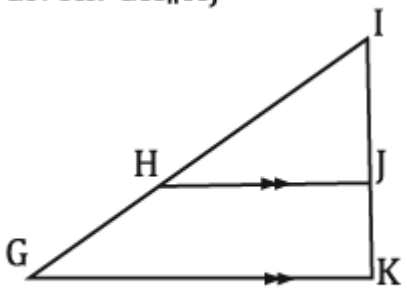
19. If AD = 3 and DB = 9, find AC.



20. If DB = 21 and AC =10, find AD.

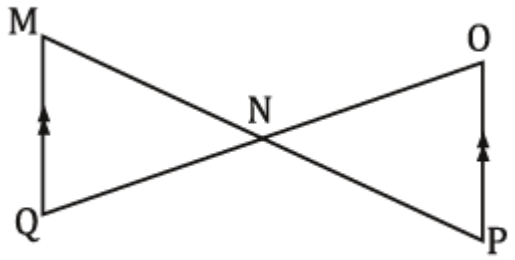


22. Given: $\overline{GK} \| \overline{HJ}$



Prove: $\triangle GIK \sim \triangle HIJ$

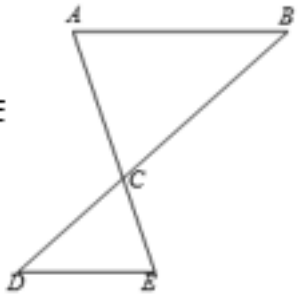
23. Given: $\overline{MQ} \| \overline{OP}$



Prove: $\triangle MNQ \sim \triangle PON$

24. Given: $\overline{AB} // \overline{DE}$

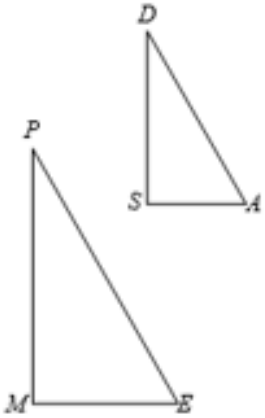
Prove: AC x CD = CB x CE



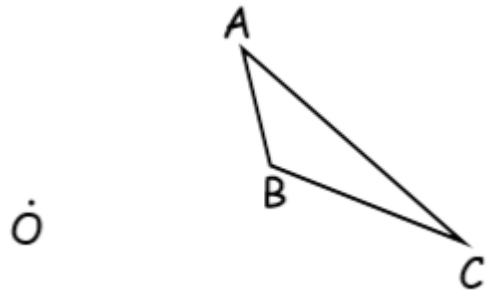
25. Given: $\angle PEM \cong \angle DAS$,

$\overline{DS} \perp \overline{SA}$, $\overline{PM} \perp \overline{ME}$

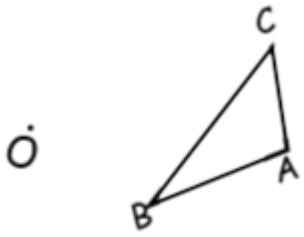
Prove: $\frac{PM}{DS} = \frac{ME}{SA}$



26. Construct ΔABC after the transformation D_3. Label it A'B'C'.



27. Construct ΔABC after the transformation D_{-2}. Label it A'B'C'.



28. The line $3y = -2x + 8$ is transformed by a dilation centered at the origin. Which linear equation could be its image?

1. y = -3/2 x + 5

2. y = -2/3 x + 5

3. y = -2x - 3

4. y = 3x + 8

29. The line $y = 2x - 4$ is dilated by a scale factor of 3 and centered at the origin. Which equation represents the image of the line after the dilation?

1) Y = 2x - 4

2) Y = 2x - 12

3) Y = 6x - 4

4) Y = 6x - 12

30. A line that passes through the points whose coordinates are (2, 3) and (8, 5) is dilated by a scale factor of 3 and centered at the origin. The image of the line

1) is perpendicular to the original line

2) is parallel to the original line

3) passes through the origin

4) is the original line