**Final Exam Study Guide** Answer Key **Chapter 2**

In Chapter 2, you reviewed the criteria for Triangle Congruence that you learned in Integrated Math 1.

These include: HL, SSS, SAS, ASA, and AAS.

You can also use rigid motions to prove that two triangles are congruent. The transformations that are rigid motions are translations, rotations, and reflections.

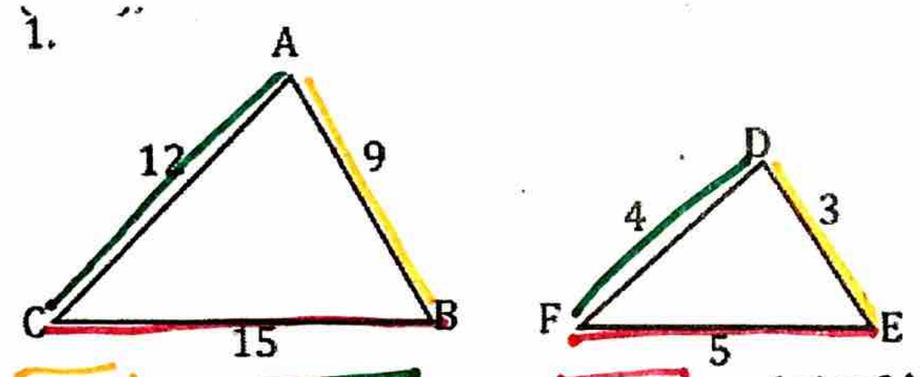
In this chapter you were introduced to a new transformation, the Dilation. When you perform a dilation, you create a new figure, with congruent angles and proportional sides. The two figures are called **similar** figures.

The long way to show that two figures are similar is the show that all corresponding angles are $\cong$ and that all corresponding sides are proportional. Using technology, we discovered a few shortcuts to this process. These are AA Similarity, SSS Similarity, and SAS Similarity.

---

Decide if each pair of triangles is similar. If they are, write a similarity statement. Justify your answer and show evidence of your thinking.

1.



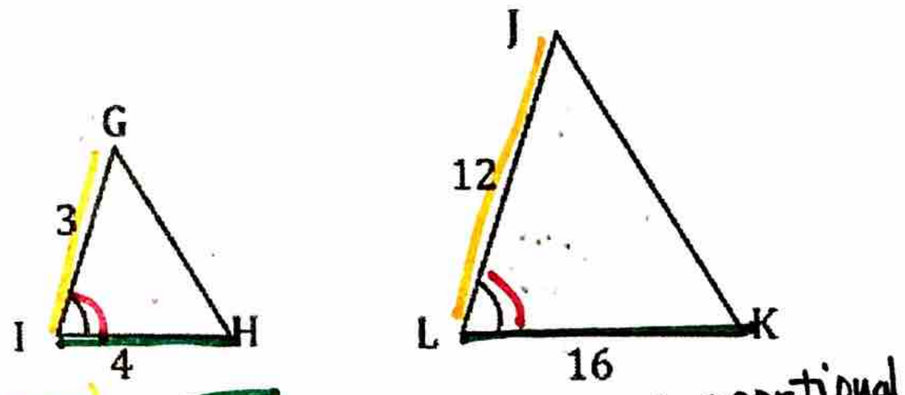

$\frac{9}{3}$ $\frac{12}{4}$ $\frac{15}{5}$

$3 \cong 3 \cong 3$

corresp. sides are proportional.

$\triangle ABC \sim \triangle DEF$ by SSS$\sim$

2.



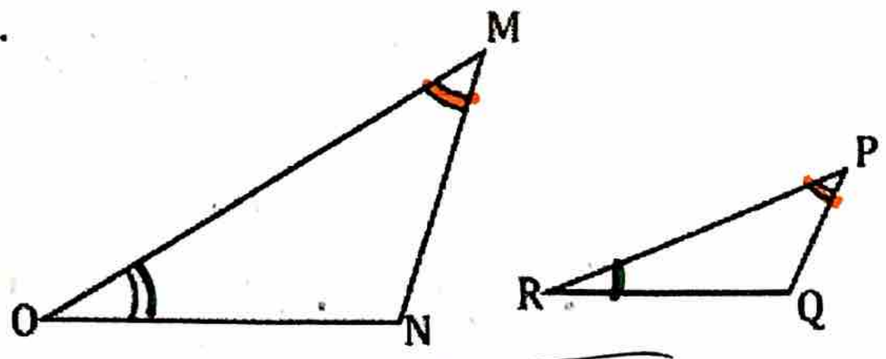

$\frac{3}{12}$ $\frac{4}{16}$ ← 2 sides proportional

$\frac{1}{4} = \frac{1}{4}$ ← $\cong$ $\angle$s

$\angle I \cong \angle L$

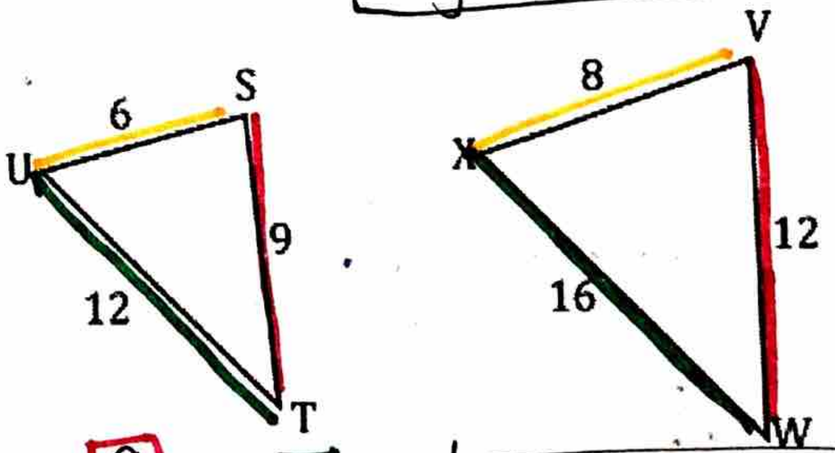
$\triangle GIH \sim \triangle JLK$ by SAS$\sim$

3.




$\triangle OMN \sim \triangle RPQ$ by AA$\sim$

4.

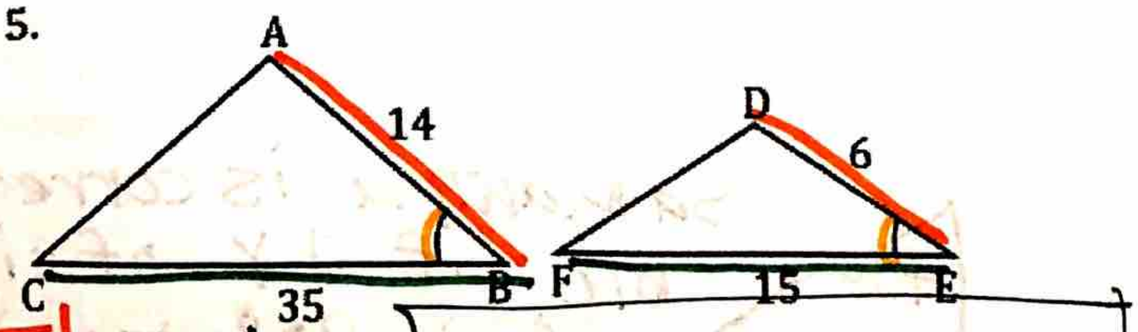



$\frac{6}{8}$ $\frac{9}{12}$ $\frac{12}{16}$

$\frac{3}{4} = \frac{3}{4} = \frac{3}{4}$

$\triangle SUT \sim \triangle VXW$ SSS$\sim$

5.

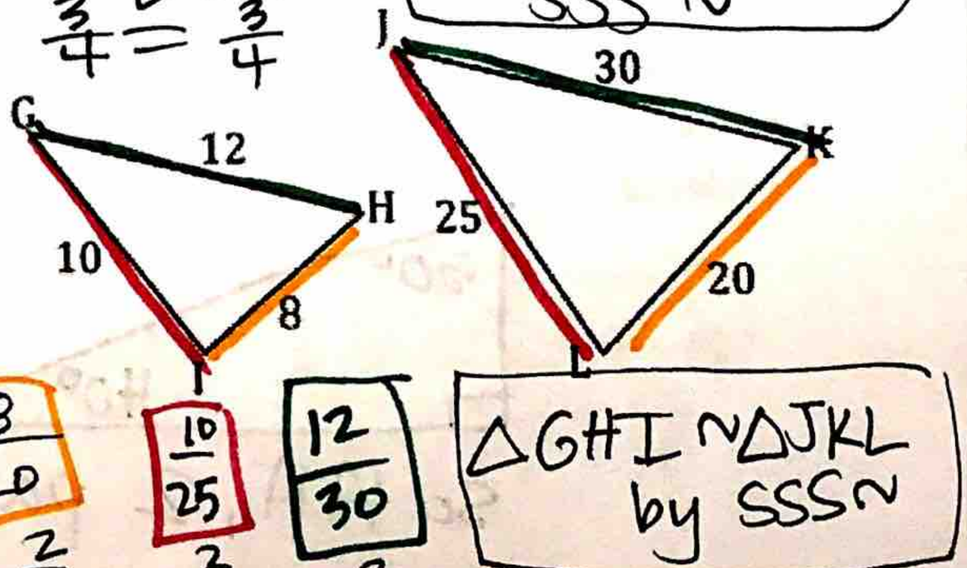



$\frac{6}{14}$ $\frac{15}{35}$

$\frac{3}{7} = \frac{3}{7}$

$\triangle ABC \sim \triangle DEF$ by SAS$\sim$

6.

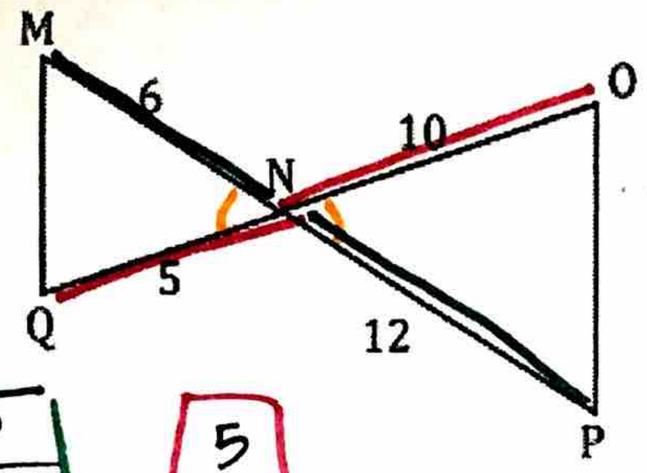



$\frac{8}{20}$ $\frac{10}{25}$ $\frac{12}{30}$

$\frac{2}{5} = \frac{2}{5} = \frac{2}{5}$

$\triangle GHI \sim \triangle JKL$ by SSS$\sim$

7.

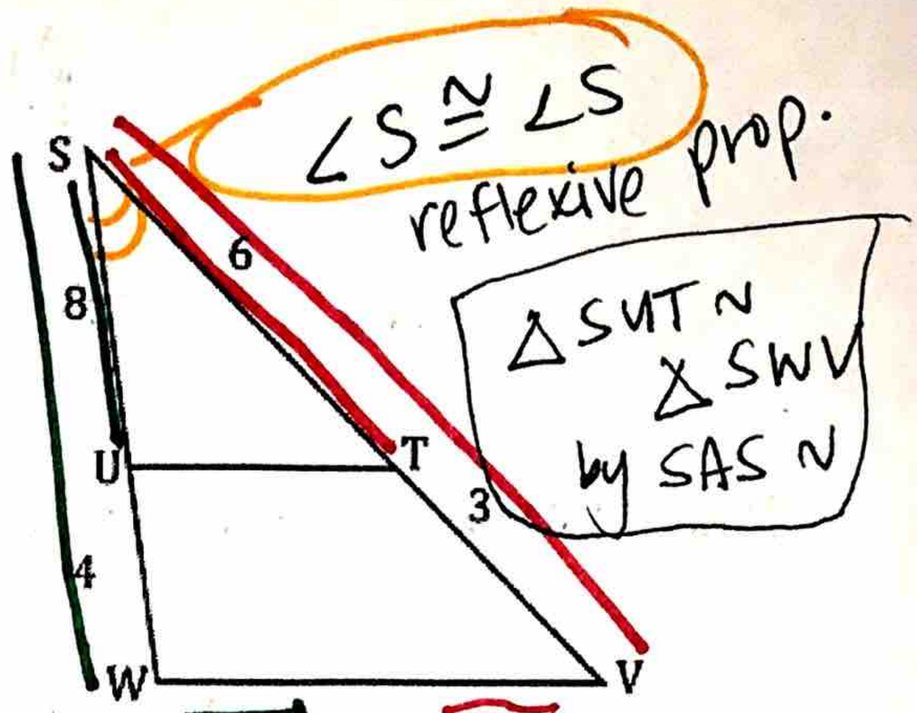



$\frac{6}{12}$ $\frac{5}{10}$

$\frac{1}{2} = \frac{1}{2}$ ✓

△MNQ ~ △PNO by SAS ~

8.

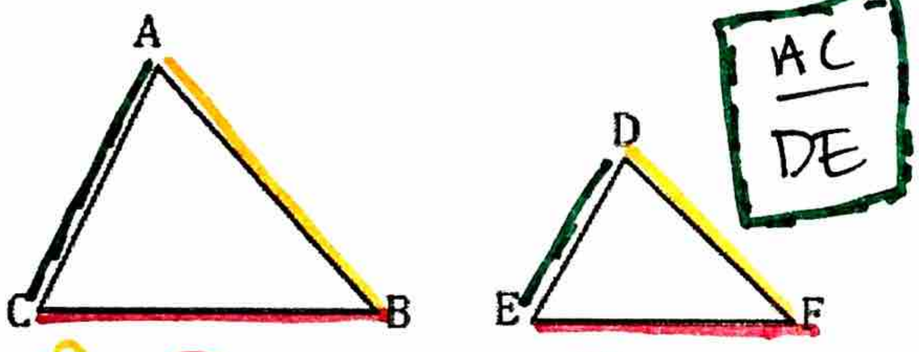



∠S ≅ ∠S reflexive prop.

△SUT ~ △SWV by SAS ~

$\frac{2}{3}$ $\frac{8}{12}$ ✓ $\frac{6}{9}$ $\frac{2}{3}$

9. $\frac{AB}{DF} = \frac{BC}{EF}$ What additional information is necessary to show ΔABC~ΔDEF by SSS?




$\frac{AC}{DE}$

~~A.~~ $\frac{AB}{AC} = \frac{BC}{EF}$

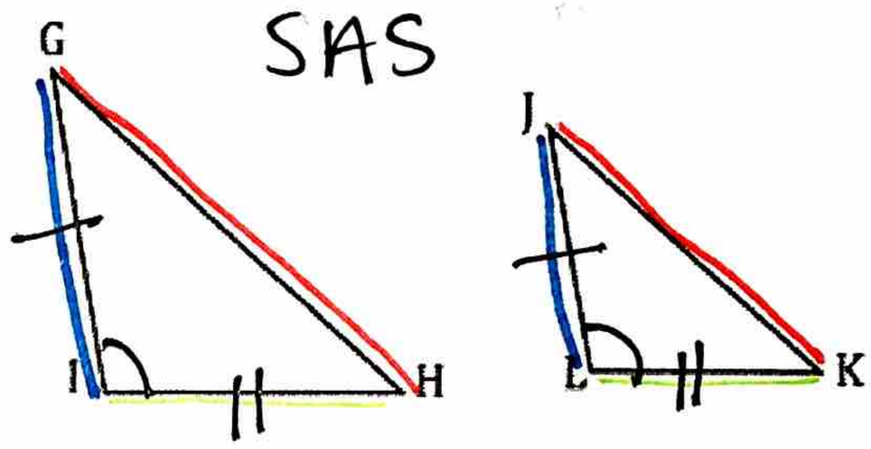
B. $\frac{AC}{DE} = \frac{BC}{EF}$

~~C.~~ $\frac{AC}{DF} = \frac{AC}{EF}$

D. $\frac{CB}{AB} = \frac{EF}{DF}$ ← this is true but doesn't help us w/ SSS. we need green for that.

10. $\frac{GI}{JL} = \frac{IH}{LK}$ What additional information is necessary to show ΔGHI~ΔJKL by SAS?

SAS



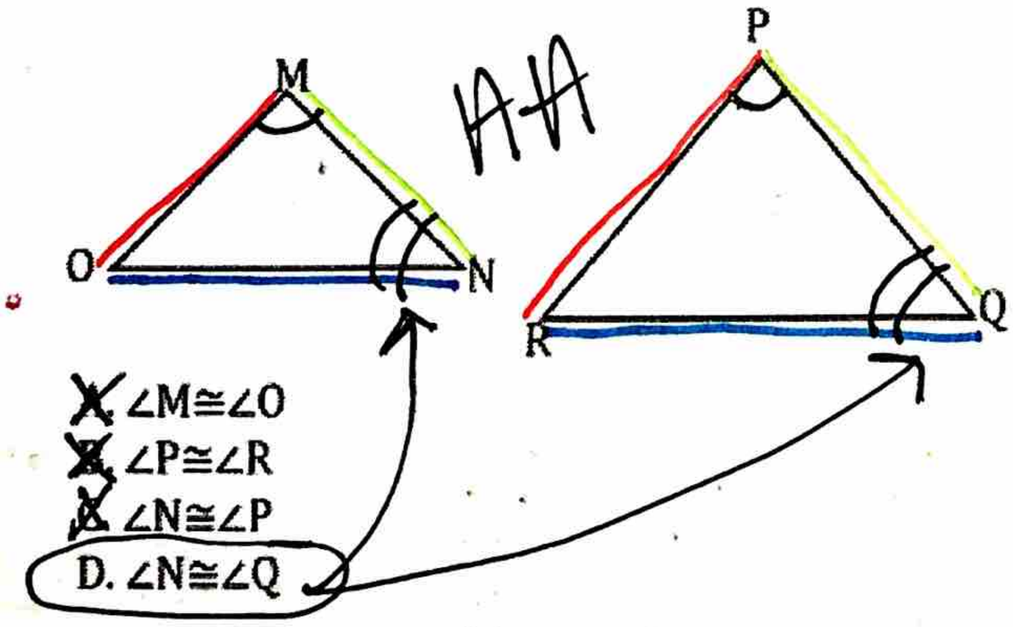

A. ∠G≅∠J

B. ∠H≅∠K

C. ∠I≅∠L

D. ∠G≅∠H

11. ∠M≅∠P. What additional information is necessary to show that ΔMNO~ΔPQR by AA?




AA

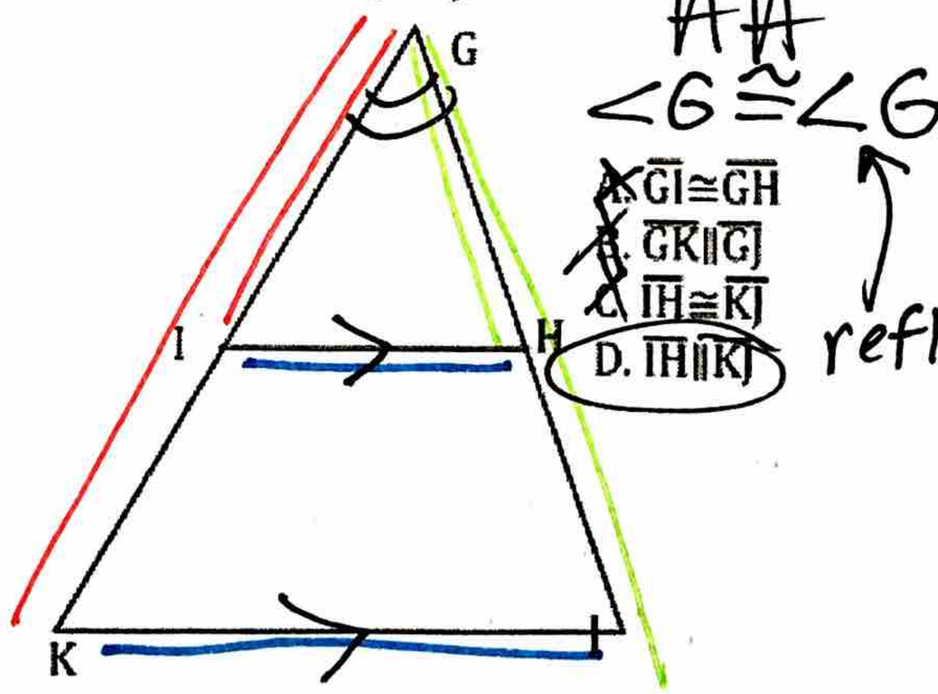
~~A.~~ ∠M≅∠O

~~B.~~ ∠P≅∠R

~~C.~~ ∠N≅∠P

D. ∠N≅∠Q

12. What additional information is necessary to show ΔGHI~ΔGJK by AA?




AA

∠G ≅ ∠G

~~A.~~ $\overline{GI} \cong \overline{GH}$

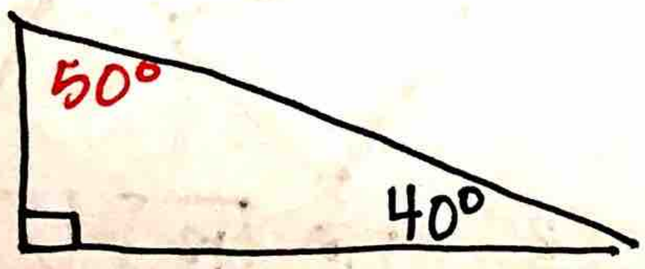
~~B.~~ $\overline{GK} \| \overline{GJ}$

~~C.~~ $\overline{IH} \cong \overline{KJ}$

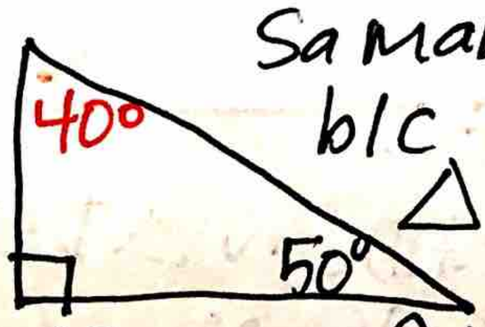
D. $\overline{IH} \| \overline{KJ}$

reflexive

13. One right triangle has a 40 degree angle. A second right triangle has a 50 degree angle. Samantha says that the triangles are similar to each other. Emmanuel says they are not similar. Who is correct? Justify your answer and show evidence.




So AA, 2 pairs of

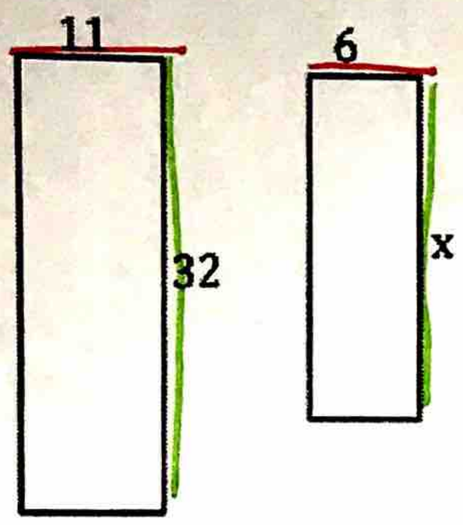



∠s are ≅.

Samantha is correct b/c if 1 ∠ of right △ is 40°, then other is 50°. 50° and 90°!

**Each pair of figures is similar. Find the missing length. Show evidence of your thinking.**

14.

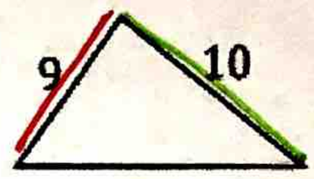



$\frac{6}{11} = \frac{x}{32}$

$\frac{11x}{11} = \frac{192}{11}$

$x \approx 17.45$

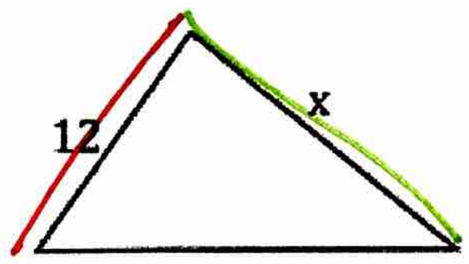
15.



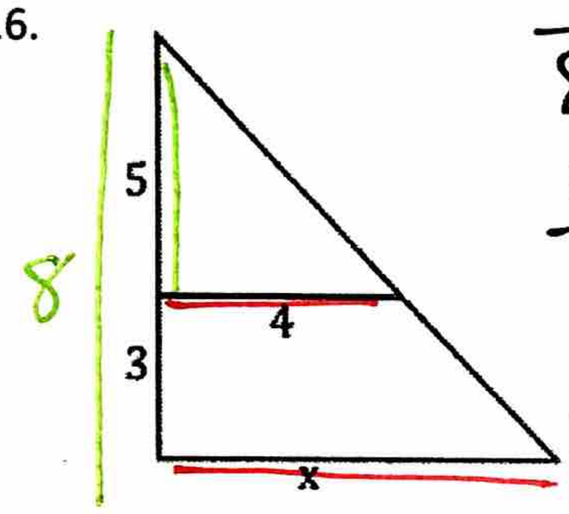

$\frac{9}{12} = \frac{10}{x}$

$\frac{9x}{9} = \frac{120}{9}$

$x \approx 13.3$




16.

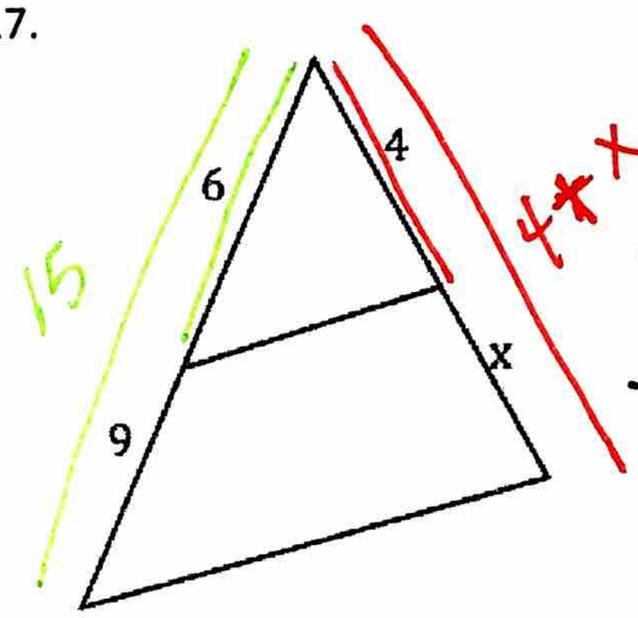



$\frac{5}{8} = \frac{4}{x}$

$\frac{5x}{5} = \frac{32}{5}$

$x = 6.4$

17.




$\frac{6}{15} = \frac{4}{4+x}$

$6(4+x) = 60$

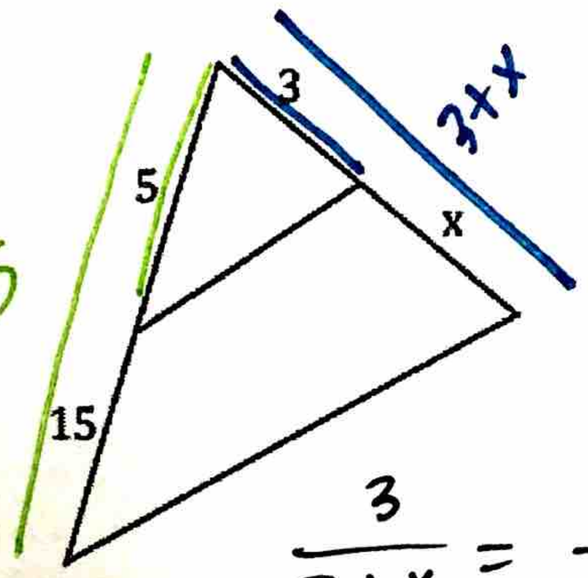
$24 + 6x = 60$

$-24 \quad -24$

$\frac{6x}{6} = \frac{36}{6}$

$x = 6$

18.




$\frac{3}{3+x} = \frac{5}{15}$

$45 = 5(3+x)$

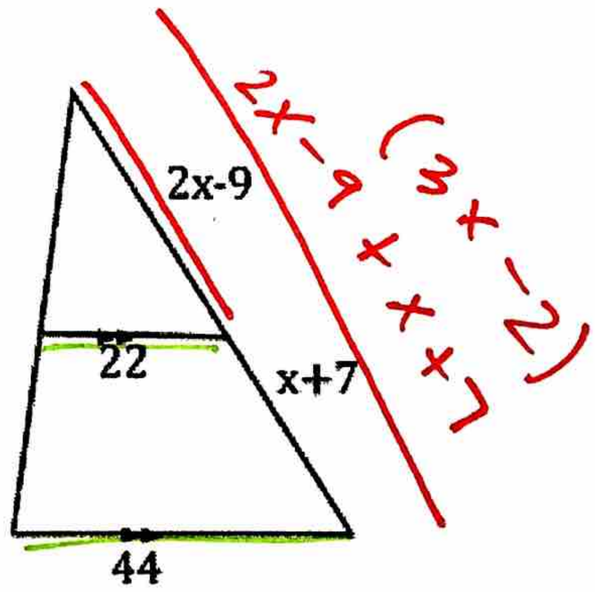
$45 = 15 + 5x$

$-15 \quad -15$

$\frac{30}{5} = \frac{5x}{5}$

$x = 6$

19.




$\frac{22}{44} = \frac{2x-9}{3x-2}$

$\frac{1}{2} = \frac{2x-9}{3x-2}$

$3x - 2 = 2(2x-9)$

$3x - 2 = 4x - 18$

$+18 \quad +18$

$16 = x$