

AAA ✓

M8 - 2.0 - Equal Fraction Shapes Notes

Draw side by side (separately).

Opposite \angle 's = 3rd \angle in a Δ

OR

180° Rotation

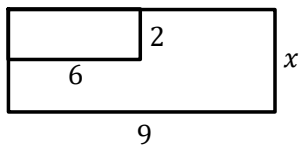
Put what you're looking for on top.

$\frac{x}{3} = \frac{10}{5}$	$\frac{SMALLER}{BIGGER} = \frac{smaller}{bigger}$
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$\frac{10}{5} = 2$ Scale Factor = 2

$x = 6$

<p>Algebra</p> $\frac{x}{3} = \frac{10}{5}$ $3 \times \frac{x}{3} = \frac{10}{5} \times 3$ $\frac{3x}{3} = \frac{30}{5}$ $x = 6$	<p>Cross Multiply</p> $\frac{x}{3} = \frac{10}{5}$ $5 \times x = 3 \times 10$ $5x = 30$ $\frac{5x}{5} = \frac{30}{5}$ $x = 6$	<p>Equal Fractions</p> $\frac{x}{3} = \frac{10}{5}$ $\frac{x}{10} = \frac{3}{5}$ $\frac{x}{10} \times 2 = \frac{3}{5} \times 2$ $\frac{2x}{10} = \frac{6}{5}$ $\frac{2x}{10} \times 5 = \frac{6}{5} \times 5$ $2x = 6$ $x = 6$	<p>LCD</p> $\frac{x}{10} = \frac{3}{5}$ $\frac{x}{10} = \frac{6}{10}$ $x = 6$
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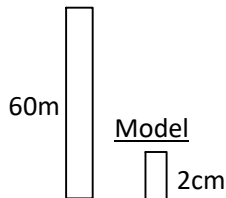
A totem pole is 60m tall. A model totem pole is 2cm tall. Find the simplified scale ratio.

$$\frac{x}{9} = \frac{2}{6}$$

$$2 \times \frac{x}{2} = \frac{2}{6} \times 2$$

$$x = 3$$

Totem pole



Convert to cm (Same Units)

$$\frac{? \text{ cm}}{60\text{m}} = \frac{100\text{cm}}{1\text{m}}$$

$$\frac{? \text{ cm}}{60 \times 60} = \frac{100\text{cm}}{1 \times 60}$$

$$\frac{? \text{ cm}}{3600} = \frac{100}{60}$$

$$? \text{ cm} = \frac{100 \times 3600}{60}$$

$$? \text{ cm} = 6000 \text{ cm}$$

Like units on top/bottom

$$\frac{6000 : 2}{x : 1} \div 2$$

$$6000 \div 2 = 3000$$

$$x = 3000$$

Scale 3000 : 1

3 Blue marbles and 2 Red marbles in a box. What is the ratio of :



Blue to red?

3 Blue : 2 Red

3 : 2 Part to Part

Red to blue?

2 Red : 3 Blue

2 : 3

Blue to total?

3 Blue : 5 Total

3 : 5 Part to Total

Red to total?

2 Red : 5 Total

2 : 5

Red to Blue to total?

r : b : T
2 : 3 : 5

A box has 9 Blue marbles in the same ratio as above. How many Red marbles and Total marbles are in the box?

$$\times 3 \left(\frac{3 \text{ Blue} : 2 \text{ Red}}{9 \text{ Blue} : ? \text{ Red}} \right) \times 3$$

$$9 \div 3 = 3 \text{ Bigger divided by smaller}$$

$$2 \times 3 = 6$$

6 Red Marbles

$$9 \text{ Blue} + 6 \text{ Red} = 15 \text{ Marbles}$$

There are 15 marbles in the larger box.

A box has 25 marbles in the same ratio as above. How many Red marbles are in the box?

$$\times 5 \left(\frac{2 \text{ Red} : 5 \text{ Total}}{? \text{ Red} : 25 \text{ Total}} \right) \times 5$$

$$2 \times 5 = 10$$

$$25 - 10 = 15$$

10 Red Marbles

15 Blue Marbles

65 children, 15 more girls than boys.

$$x + x + 15 = 65$$

$$2x + 15 = 65$$

$$-15 \quad -15$$

$$2x = 50$$

$$\frac{2x}{2} = \frac{50}{2}$$

$$x = 25$$

let $x = \#$ of boys = 25

let $x + 15 = \#$ of girls = 25 + 15 = 40

$$\frac{g : b}{40 : 25} \div 5 \left(\frac{8 : 5}{} \right) \div 5$$

M8 - 2.0 - Similar Triangles Notes

Congruent (Equal) Triangle's

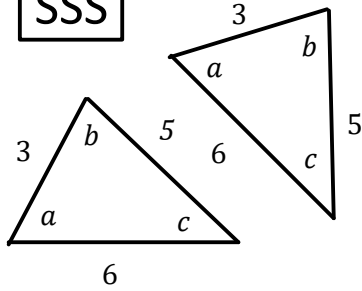
Triangles are Congruent if:

Like : Like

Side Side Side

SSS

$\angle a = \angle a$
 $\angle b = \angle b$
 $\angle c = \angle c$

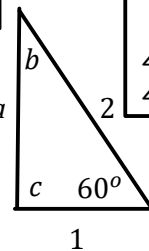
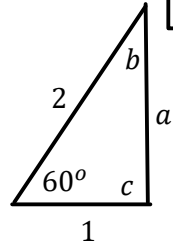


A Side then a Side then a Side

IN ORDER!

Side Angle Side

SAS

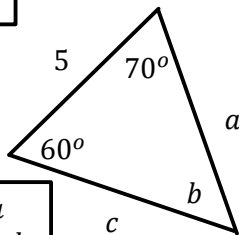
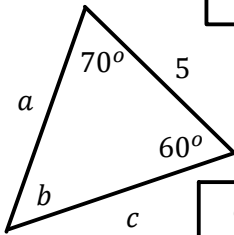


$a = a$
 $\angle b = \angle b$
 $\angle c = \angle c$

A Side then an Angle then a Side

Angle Side Angle

ASA



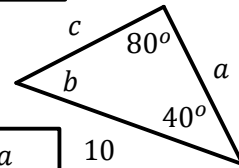
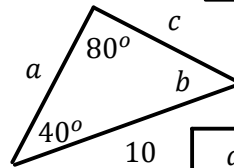
$a = a$
 $\angle b = \angle b$
 $c = c$

An Angle then a Side then an Angle.

Angle Angle Side

AAS

ASA!



$a = a$
 $\angle b = \angle b$
 $c = c$

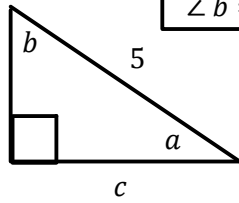
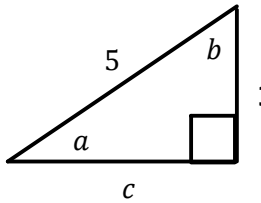
An Angle then an Angle then a Side.

Hypotenuse Leg

HL

SSS!

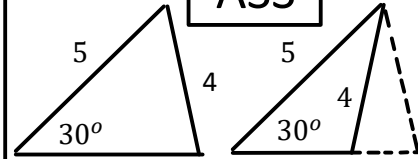
$c = c$
 $\angle a = \angle a$
 $\angle b = \angle b$



A Hypotenuse and a Leg

Angle Side Side

ASS



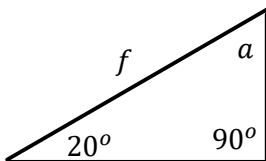
Neither!

Unless they are!

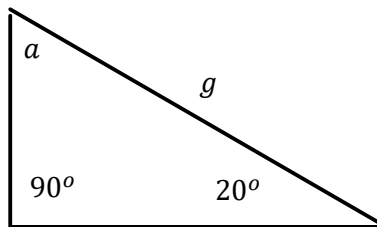
Similar Triangles

Angle Angle Angle

AAA



b



c

Equal Fractions

$$\frac{b}{c} = \frac{d}{e} = \frac{f}{g}$$

Can be used for all Congruent Triangles as well (for sides*)!

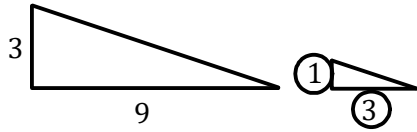
3rd Angle in a Triangle

$$\angle a = \angle a$$

$$180^\circ - 90^\circ - 20^\circ = 70^\circ$$

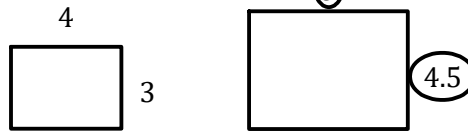
M8 - 2.0 - Similar Shapes Notes

Reduce by 3 ; Reduced by a factor of $\frac{1}{3}$

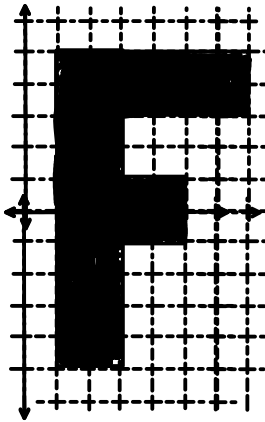
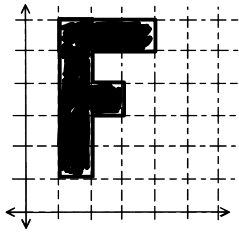


$$\begin{aligned} 3 \div 3 &= \textcircled{1} & 3 \times \frac{1}{3} &= \textcircled{1} \\ 9 \div 3 &= \textcircled{3} & 9 \times \frac{1}{3} &= \textcircled{3} \end{aligned}$$

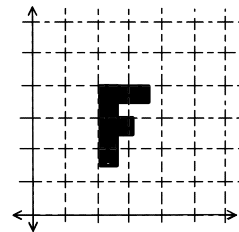
Enlarge by $\frac{3}{2} = 1.5$



$$\begin{aligned} 4 \times \frac{3}{2} &= \textcircled{6} & 3 \times \frac{3}{2} &= \textcircled{4.5} \end{aligned}$$

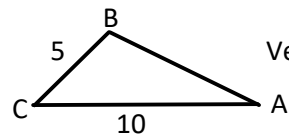
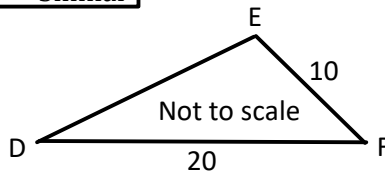
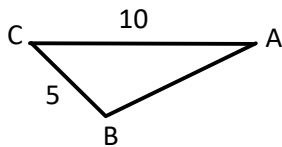


Enlarged by 2 = Enlarged by a factor of 2



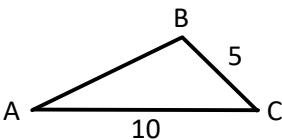
Reduce by 2
* = Reduced by a factor of $\frac{1}{2}$

Is $\triangle ABC \sim \triangle DEF$? ~ : Similar



Vertical Flip

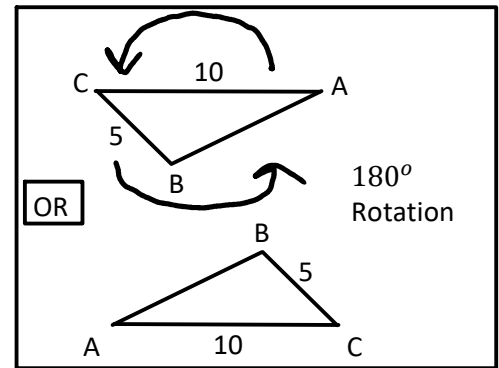
Like Side
Like Side



Horizontal Flip

$$\frac{10}{5} = 2 \quad \frac{20}{10} = 2 \quad \checkmark$$

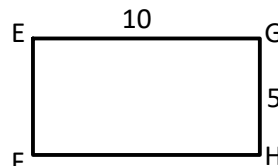
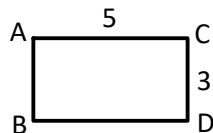
Same ratio Similar



Same Orientation

Long side on left OR Small angle on left
Short side on right Large angle on right

Is $\square ABCD \sim \square EFGH$?



$$\frac{10}{5} = 2 \quad \frac{5}{3} = 1.66 \quad \times$$

Not same ratio. Not Similar