

# Similar Figures Printable Notes

## Corresponding Sides & Angles

Week 1 (4/20-4/24)

**Topic:** Identify corresponding sides and corresponding congruent angles of similar quadrilaterals and triangles.

**Topic:** Given two similar quadrilaterals or triangles, write similarity statements using symbols.

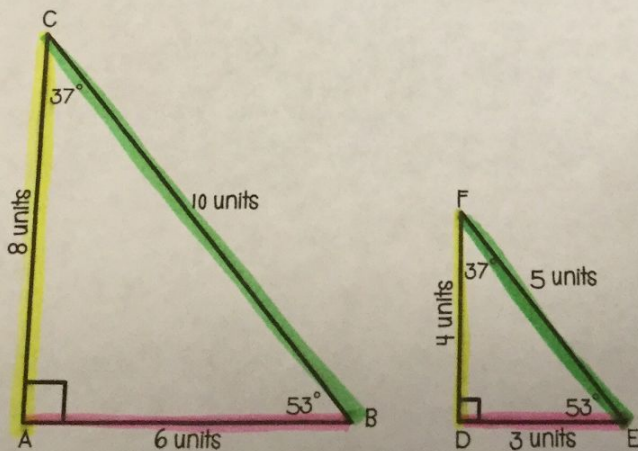
### similar figures

For figures to be similar, the figures must meet three requirements:

- corresponding angles must be congruent (equal)
- corresponding sides must be proportional
- the figures must be the same shape but NOT necessarily the same size.

☆ The symbol to show figures are similar is  $\sim$  ☆

Use the symbols for similar figures to show triangle ABC is similar to triangle DEF. Then set up a proportion to prove the two triangles are similar and identify the scale factor.



PROPORTIONAL EQUAL

Corresponding Sides	Corresponding Angles
$\overline{AC} \sim \overline{DF}$ or $\overline{CA} \sim \overline{FD}$	$\angle A = \angle D$ $90^\circ$
$\overline{AB} \sim \overline{DE}$ or $\overline{BA} \sim \overline{ED}$	$\angle B = \angle E$ $53^\circ$
$\overline{BC} \sim \overline{EF}$ or $\overline{CB} \sim \overline{FE}$	$\angle C = \angle F$ $37^\circ$

180°

Scale Factor: \_\_\_\_\_

## Corresponding Sides & Angles

Week 1 (4/20-4/24)

**Topic:** Identify corresponding sides and corresponding congruent angles of similar quadrilaterals and triangles.

**Topic:** Given two similar quadrilaterals or triangles, write similarity statements using symbols.

Week 2 (4/27-5/1)

**Topic:** Given angle measures in a quadrilateral or triangle, determine unknown angle measures in a similar quadrilateral or triangle.

### Similar Figures

**Similar Figures** are figures that are *similar*, have the same shape, but **NOT** necessarily the same size.

When two figures are similar,

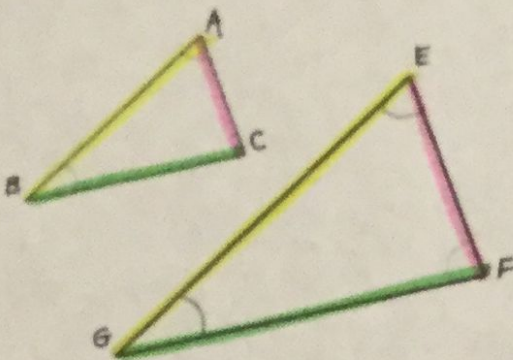
- Corresponding angles must be congruent.
- Corresponding sides must be proportional.

**Vocabulary:**

Symbol	Representation
~	Similar Same shape, different size
$\triangle ABC$	Triangle ABC

Symbol	Representation
$\overline{DE}$	Line segment DE
$\cong$	Congruent (equal)

$\triangle ABC \sim \triangle EGF$



PROPORTIONAL	EQUAL
Corresponding Sides	Corresponding Equivalent Angles
$\overline{AB} \sim \overline{EG}$	$\angle A = \angle E$
$\overline{BC} \sim \overline{GF}$	$\angle B = \angle G$
$\overline{CA} \sim \overline{FE}$	$\angle C = \angle F$

Using the above similar triangles, complete the statement of proportionality.

$$\frac{\overline{AB}}{\overline{EG}} = \frac{\overline{BC}}{\overline{GF}} = \frac{\overline{CA}}{\overline{FE}}$$

small

|

$\overline{AB}$

$\overline{BC}$

$\overline{CA}$

→

big

|

$\overline{EG}$

$\overline{GF}$

$\overline{FE}$

→

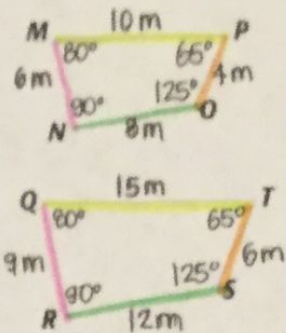


## Determining Similar Figures

Week 1 (4/20-4/24)

**Topic:** Write proportions to express the relationships between the lengths of corresponding sides of similar quadrilaterals and triangles.)

Quadrilateral MNOP ~ QRST.



Corresponding Sides	Corresponding Angles
$\frac{\overline{MN}}{\overline{QR}}$ $\overline{MN}$ corresponds to $\overline{QR}$ .	$\angle O$ corresponds to $\angle S$ .
$\frac{\overline{NO}}{\overline{RS}}$ $\overline{NO}$ corresponds to $\overline{RS}$ .	$\angle T$ corresponds to $\angle P$ .
$\frac{\overline{OS}}{\overline{PO}}$ $\overline{OS}$ corresponds to $\overline{PO}$ .	$\angle M$ corresponds to $\angle Q$ .
$\frac{\overline{PM}}{\overline{TR}}$ $\overline{PM}$ corresponds to $\overline{TR}$ .	$\angle R$ corresponds to $\angle N$ .

Using the above similar quadrilaterals, complete the statement of proportionality.

$$\frac{\overline{MN}}{\overline{QR}} = \frac{\overline{MP}}{\overline{QT}} = \frac{\overline{PO}}{\overline{TS}} = \frac{\overline{ON}}{\overline{SR}}$$

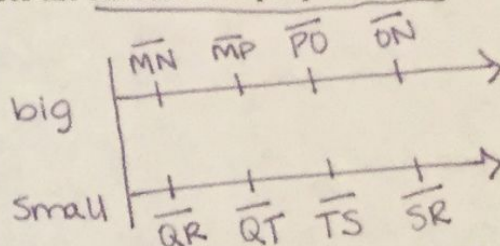
$$\frac{6}{9} = \frac{10}{15} = \frac{4}{6} = \frac{8}{12}$$

$$\frac{6 \div 3}{9 \div 3} = \frac{2}{3}$$

$$\frac{10 \div 5}{15 \div 5} = \frac{2}{3}$$

$$\frac{4 \div 2}{6 \div 2} = \frac{2}{3}$$

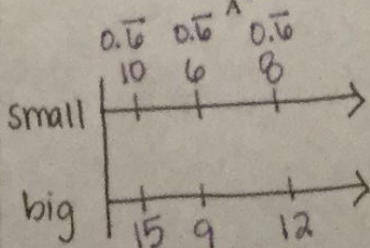
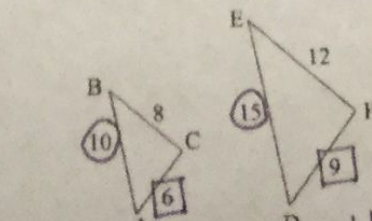
$$\frac{8 \div 4}{12 \div 4} = \frac{2}{3}$$



\*\*In two similar geometric figures, the ratio of their corresponding sides is called the **scale factor**.

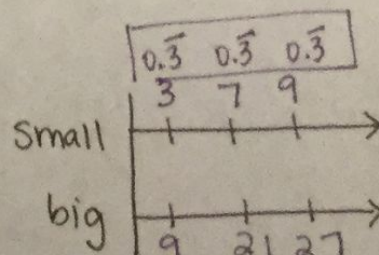
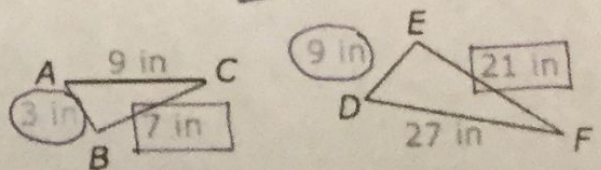
**Determining Similarity:** Identify the corresponding sides in the pair of figures. Then use ratios to determine whether the figures are similar.

EX: Determine if  $\triangle ABC \sim \triangle DEF$ .



Yes, the figures are similar.

EX: Determine if  $\triangle ABC \sim \triangle DEF$ .



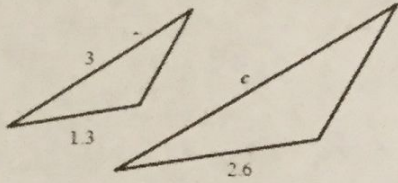
✓ similar

## Solving for a Missing Side

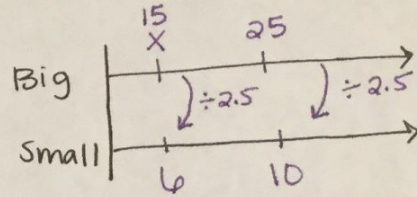
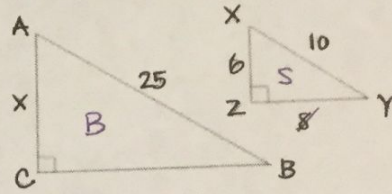
Week 2 (4/27-5/1)

**Topic:** Solve a proportion to determine a missing side length of similar quadrilaterals or triangles.

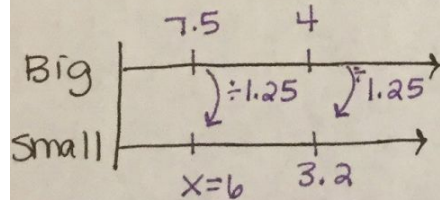
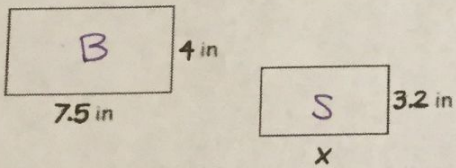
Solving for a Missing Side:



$\triangle ABC \sim \triangle XYZ$

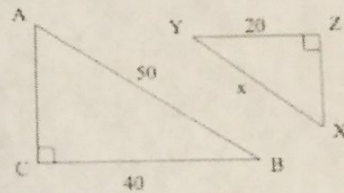


$x = 15$



$x = 6 \text{ in}$

$\triangle ABC \sim \triangle XYZ$





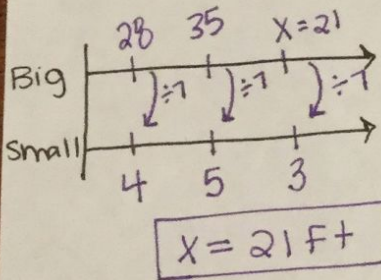
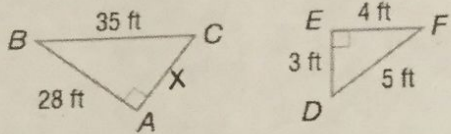
## Solving for a Missing Side

Week 2 (4/27-5/1)

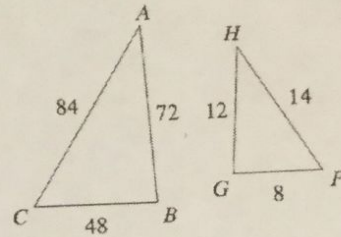
**Topic:** Solve a proportion to determine a missing side length of similar quadrilaterals or triangles.

**Redrawing Similar Figures:** To help set up a proportion for similar figures, make sure the figures are in the same orientation. *Hint: Use the letters to help!!*

$$\triangle ABC \sim \triangle EFD$$



$$\triangle ABC \sim \triangle HGF$$



$$\triangle TUV \sim \triangle QRS$$

