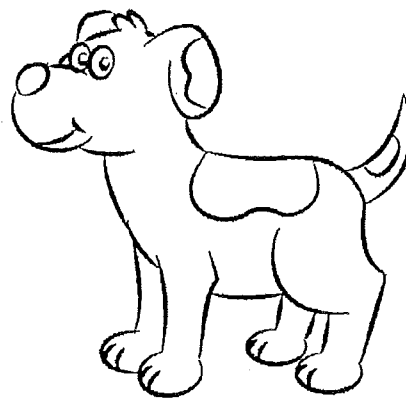
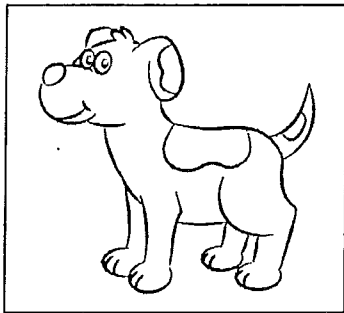


Below are 5 drawings of a dog

What is the same?

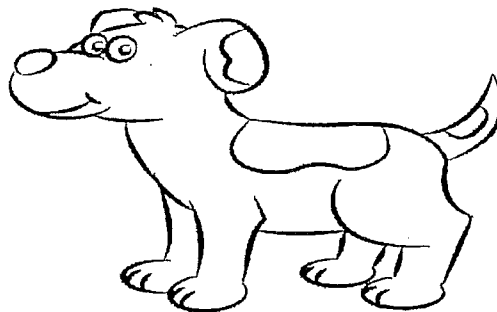
What is different?



A



C



B



D

How can we tell the similarities and the differences?

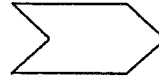
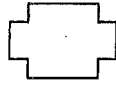
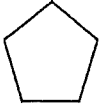
Math 9

3.2 Determining Similarity Name:

Materials: Ruler, Protractor, graph paper

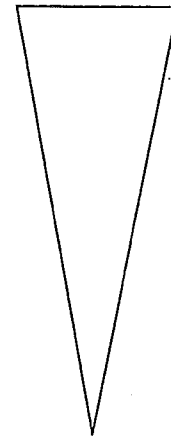
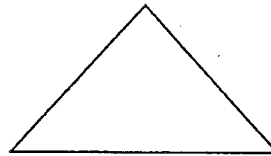
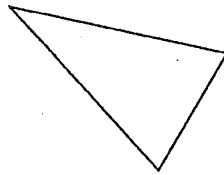
Goals: To determine whether polygons are similar

POLYGON-A many sided figure



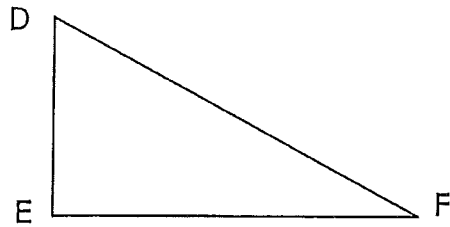
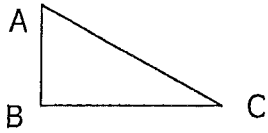
Polygons are SIMILAR if they have the _____

Which of these TRIANGLES are SIMILAR?



Why are they SIMILAR?

Measure the sides and angles of these shapes. What do you notice?

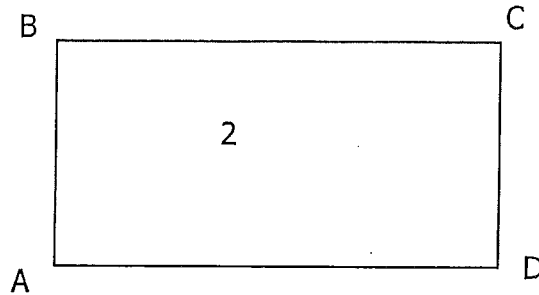
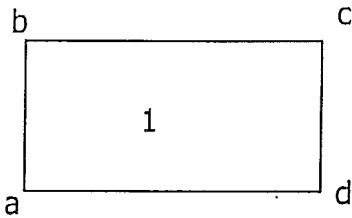


Conclusion: Angles:

Corresponding Angles-

Sides:

RULE: TWO FIGURES ARE SIMILAR IF....



Measure and record the sides of \square abcd and \square ABCD

ab corresponds to AB
cd corresponds to CD

bc corresponds to BC;
da corresponds to DA

Rectangle # 2 is an ENLARGEMENT

The ratio of # 2 to # 1 is 3:2

- If 2 polygons are similar, then the corresponding sides are _____

- And the corresponding angles are _____

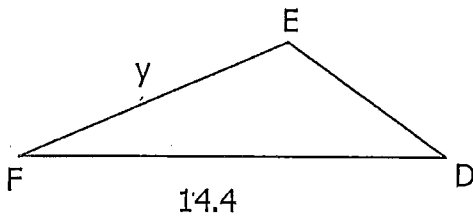
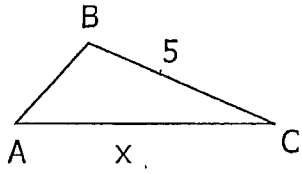
CONCLUSION

TWO OR MORE POLYGONS ARE SIMILAR WHEN THEY ARE EITHER
_____ OR

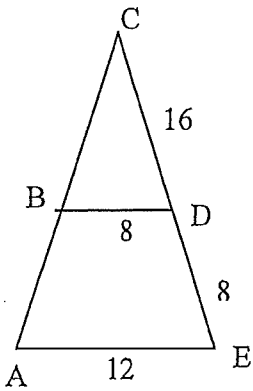
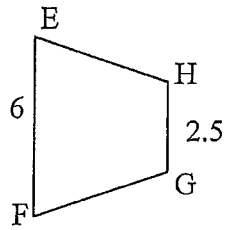
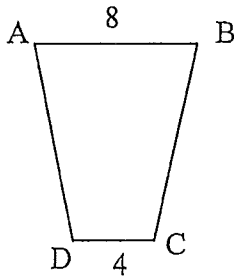
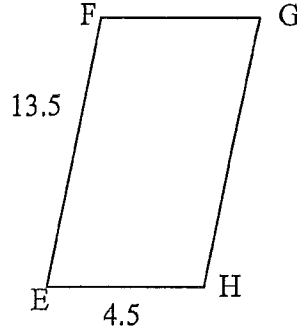
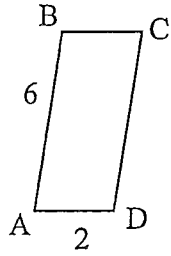
One looks like an _____ or a _____ of the other

USING THE SIMILAR POLYGON PROPETY TO FIND A MISSING SIDE

Find the length of *****



Determine whether the following pairs of polygons are similar



❖ The SCALE FACTOR is the number by which a corresponding side of a polygon is MULTIPLIED, to form a new polygon "How many times bigger/smaller"

SCALE FACTOR can be shown in several ways

Ratio/Fraction 3:2 or 1.5:1 or $\frac{3}{2}$
 ↳ Division

Percent 150%
 ↳ $\times \div 100$

Decimal 1.5

ALL OF THE SCALE FACTORS TO LEFT ARE
ENLARGEMENTS

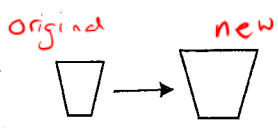
- Bigger number first
- Bigger number top
- Greater than 100%
- Greater than 1

NOTE: The polygons must first be SIMILAR

new : original
 $\frac{\text{new}}{\text{original}}$

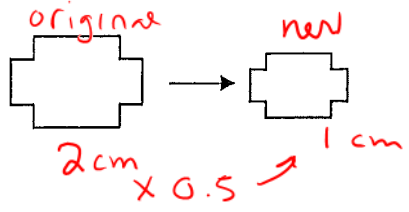
❖ Do Activity on pp. 110-111

Any scale factor greater than 1 is an ENLARGEMENT



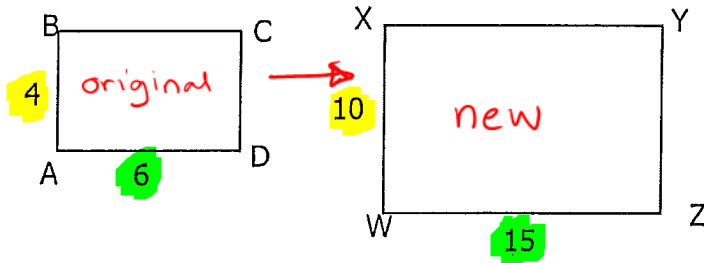
Any scale factor less than 1 is a REDUCTION

eg 0.5
50%



❖ ENLARGEMENTS

The second rectangle is an ENLAREMENT of the first one. Determine the SCALE FACTOR of the following enlargement



1) Identify pairs of corresponding sides.

Ratio new: original

$10:4 \rightarrow$ reduce $5:2$

$15:6 \rightarrow 5:2$

Fraction

$\frac{\text{new}}{\text{original}}$

$\frac{10}{4}$ or $\frac{15}{6}$

$\downarrow \quad \downarrow$
 $\frac{5}{2}$

Decimal

$\frac{5}{2} = 2.5$

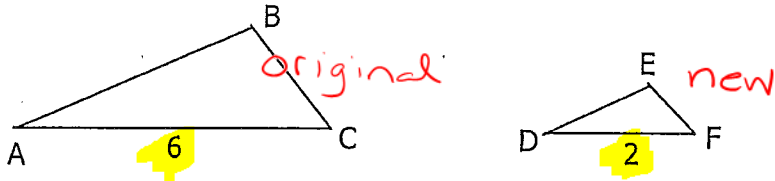
↑ new is 2.5 times larger than original

Percent: Multiply decimal by 100

$2.5 \times 100 = 250\%$

❖ REDUCTIONS

Determine the scale factor of this REDUCTION



Ratio new : original

$$2 : 6 \rightarrow 1 : 3$$

Fraction $\frac{1}{3}$

Decimal $1 \div 3 = 0.\overline{33}$

Percent $0.\overline{33} \times 100$

$$= 33\%$$

$$33.\overline{3}\%$$

Scale Factor

→ Drafting: Scale drawing

→ Model Toys

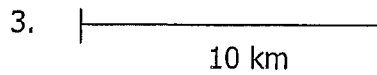
→ Map.

❖ MAPS ARE A GOOD EXAMPLE OF USING SCALE FACTOR

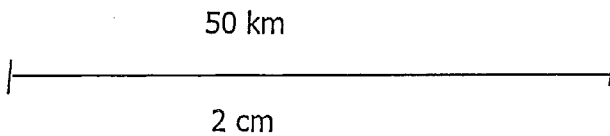
1. 1 CM = 20 KM

2. 1: 20 000

same units.



Example: Given the following scale



50 km of real distance corresponds to
2 cm on the map

What is the ACTUAL DISTANCE for a map distance of 7 cm.



$$\frac{2 \text{ cm}}{7 \text{ cm}} = \frac{50 \text{ km}}{x \text{ km}}$$

$$7 \times 50 \div 2$$

$$350 \div 2 = 175 \text{ km}$$

Pg 114 3a, 4, 5, 8, 9, 10, 11ac, 12