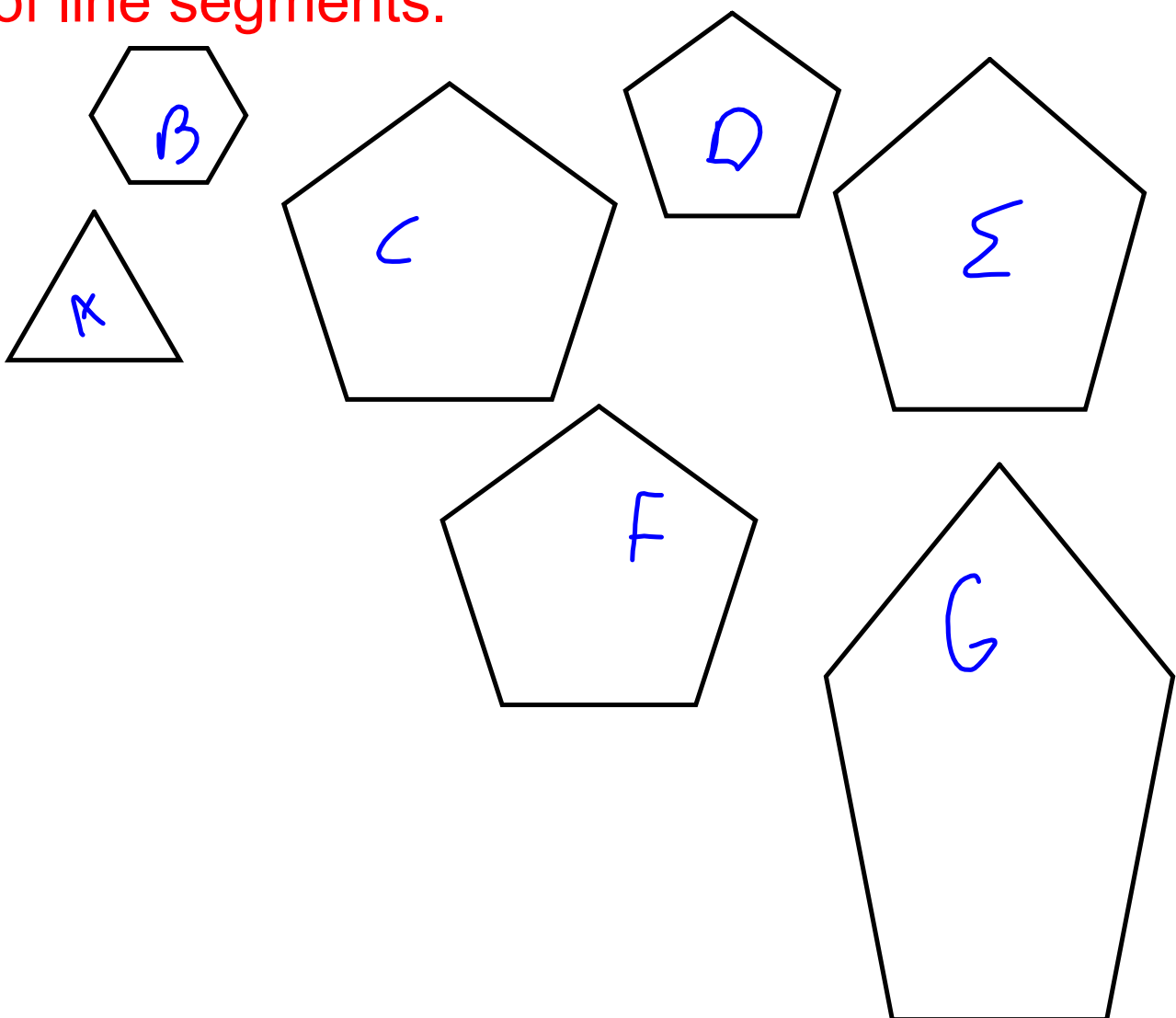


# SECTION 7.3

April. 16/18

## SIMILAR POLYGONS

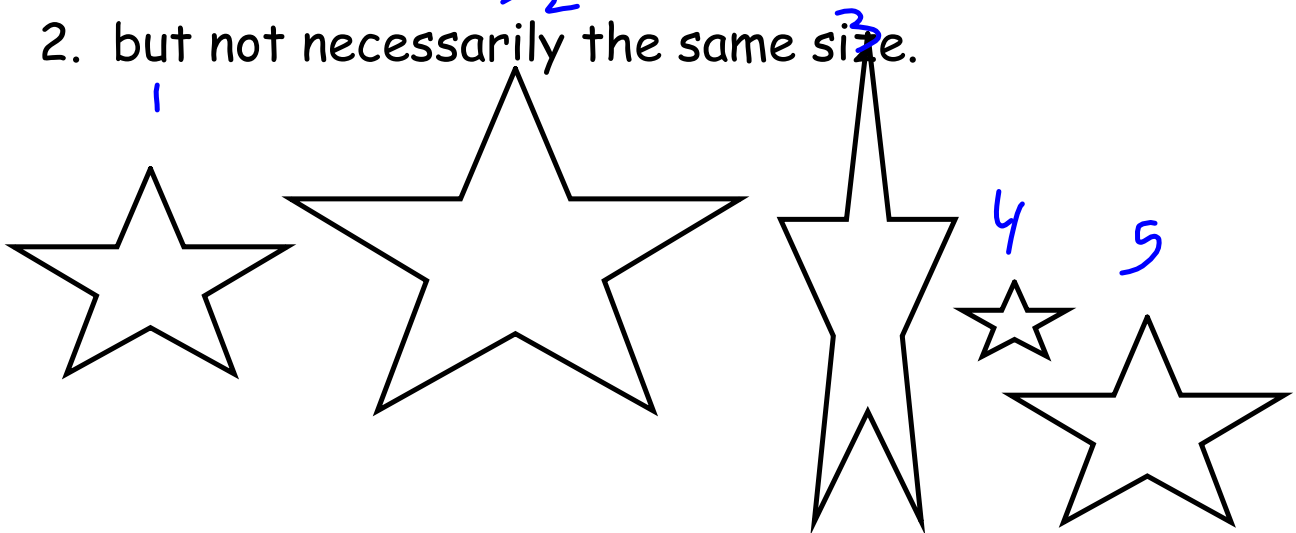
Polygon-is a closed figure made up of line segments.



When one polygon is an enlargement or a reduction of another polygon, we say the polygons are **similar**. <sup>Scaled diagram</sup>

Similar polygons have:

1. the same shape, [matching angles to be equal]
2. but not necessarily the same size.



## Check Understanding

1. A bunny is 20 cm in a diagram and you want to enlarge the picture by a scale factor of 5.5. What will the size of the bunny be?

$$\begin{aligned} \text{New size} &= S.F \times \text{original} \\ &= 5.5 \times 20 \\ &= 110 \text{ cm} \end{aligned}$$

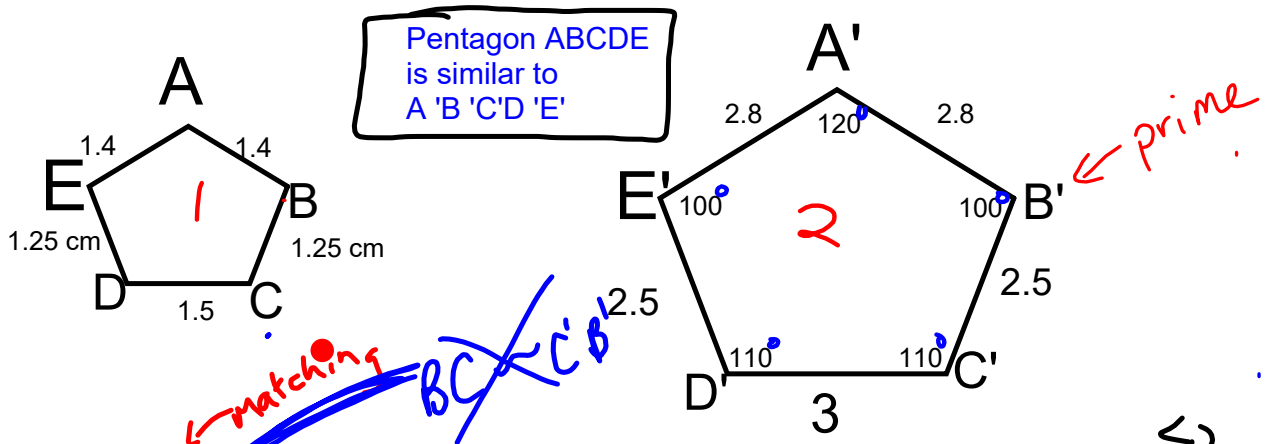
2. Solve

$$\frac{\cancel{3}x}{\cancel{3}} = \frac{15}{7.2} \quad (3)$$

$$\frac{15}{7.2}$$

$$x = \frac{45}{7.2}$$

$$x = 6.25$$



Pentagon ABCDE is similar to A'B'C'D'E'

List the corresponding sides

- AB = 1.4    A'B' = 2.8
- BC = 1.25    B'C' = 2.5
- CD = 1.5    C'D' = 3
- DE = 1.25    D'E' = 2.5
- EA = 1.4    E'A' = 2.8

Ratio for corresponding sides

$$\frac{A'B'}{AB} = \frac{2.8}{1.4} = 2$$

$$\frac{B'C'}{BC} = \frac{2.5}{1.25} = 2$$

$$\frac{C'D'}{CD} = \frac{3}{1.5} = 2$$

$$\frac{D'E'}{DE} = \frac{2.5}{1.25} = 2$$

$$\frac{E'A'}{EA} = \frac{2.8}{1.4} = 2$$

List the corresponding angles

- $\angle A = \angle A'$
- $\angle B = \angle B'$
- $\angle C = \angle C'$
- $\angle D = \angle D'$
- $\angle E = \angle E'$

## Similarity statement

$$ABCDE \sim A'B'C'D'E'$$

$$DEABC \sim D'E'A'B'C'$$

$$BCDEA \sim B'C'D'E'A'$$

In similar polygons:



- ☺ Pairs of corresponding sides have lengths in the same ratio, that is, the lengths are proportional [same scale factor]
- ☺ Corresponding angles are equal

Give a similarity [ ~ ] statement

$$\boxed{EFG \sim ABC}$$

Corresponding Angles

$$\angle E = \angle A$$

$$\angle F = \angle B$$

$$\angle G = \angle C$$

List the ratio of corresponding sides

$$\frac{EF}{AB} = \frac{FG}{BC} = \frac{EG}{AC}$$

$$\frac{AB}{EF} = \frac{BC}{FG} = \frac{AC}{EG}$$

1. Solve for the unknown in each of the following:

A.  $\frac{x}{3} = \frac{4}{15}$  (3)

$x = \frac{12}{15}$

$x = 0.8$

← reduction  
← original

B.  $\frac{AB}{4} = \frac{9}{6}$  (4) ← side

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

$AB = 6$

C.  $\frac{5}{x} = \frac{6}{10}$  (4)

$x = \frac{10}{6}$  (5)

$x = \frac{50}{6}$

$x = 8.3$

flip both fractions

2. Given the following statement answer the questions below:

**MRTC ~ NGPL**

A. What side corresponds to PG? TR

B. Which angle corresponds to R?  $\angle G$

Ratio Corresponding sides  
 $\frac{PG}{TR}$

$\frac{PG}{TR} = \frac{LN}{CM}$