Congruent Figures

Congruent figures have the same shape and size. The equal sides and angles of congruent figures are called **corresponding** sides and angles.
ΔABC is congruent to ΔDEF.

$$\angle A = \angle D$$
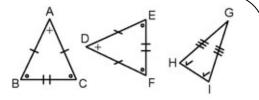$$\angle B \text{ and } \angle C = \angle E \text{ and } \angle F$$
$$\overline{AB} \text{ and } \overline{AC} = \overline{DE} \text{ and } \overline{DF}$$
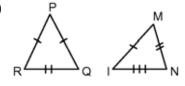$$\overline{BC} = \overline{EF}$$

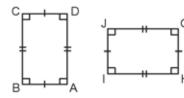This could also be written as ΔABC ≅ ΔDEF.

ΔABC is not congruent to ΔGHI. The sides and the angles are not equal.

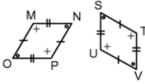**1.** Are the figures in each pair congruent? Explain your reasoning.
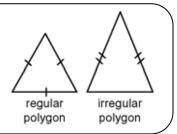
a)

b)

c)

d)

2. For any congruent figures you found in #1, list the corresponding sides and angles.

Characteristics of Regular Polygons

A **regular polygon** has all sides equal and all angles equal. An equilateral triangle is an example of a regular polygon. An **irregular polygon** is one that does not have all sides and angles equal. An isosceles triangle is an example of an irregular polygon.

regular polygon   irregular polygon

3. Decide if each polygon is regular or irregular. Give reasons for your decisions.

a) STOP

b) WATCH FOR CHILDREN

c)

d) ONE WAY

4. Draw and label one regular polygon and one irregular polygon.

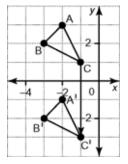## Transformations and Transformation Images

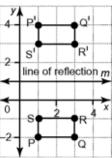A **transformation** moves one geometric figure onto another.
Transformations include translations, rotations, and reflections.
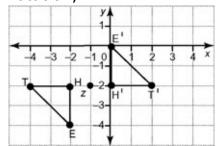The transformed figure is called an **image**.

ΔABC has been translated 4 units
vertically down. The translation image
is ΔA′B′C′. The coordinates are (−2, −1),
(−3, −2), and (−1, −3).

Rectangle PQRS has been reflected in the
line of reflection, *m*. The coordinates of
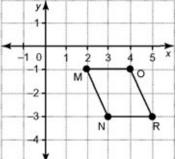P′Q′R′S′ are (1, 4), (3, 4), (3, 3), and (1, 3).

5. ΔTHE is rotated around the centre of rotation, *z*.

a) What are the coordinates of ΔTHE and ΔT′H′E′?

b) What are the direction and angle of rotation?

6. Copy parallelogram MORN onto a coordinate grid.

a) Translate MORN 3 units up and 4 units left.

b) Identify the coordinates of the translation image.

c) Draw a line of reflection, *t*, parallel to the *y*-axis at −2.

d) Reflect M′O′R′N′ in line of reflection *t*.