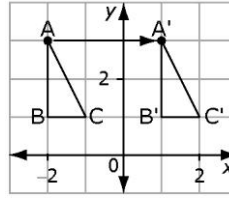


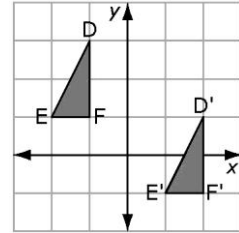
Using Translations

Transformations include translations, reflections, and rotations. A *translation* is a slide along a straight line. The slide can be horizontal, vertical, or oblique.

A'B'C' is used to label the image of ABC after the translation. A'B'C' is read "A prime, B prime, C prime."

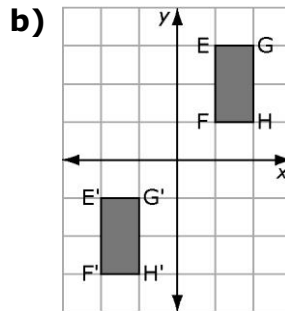
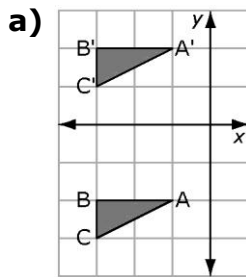


This is a translation 3 units horizontally to the right.



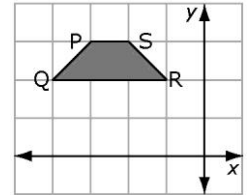
This is a translation 3 units horizontally to the right and 2 units vertically down.

1. Describe each translation.



2. Use the diagram to help answer the questions.

a) If figure PQRS is translated 6 units horizontally to the right, what are the coordinates of P'?

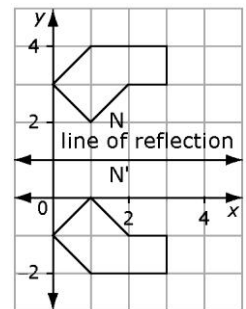


b) If figure PQRS is translated so that $P'=(3, 2)$ and $Q'=(2, 1)$, describe the translation.

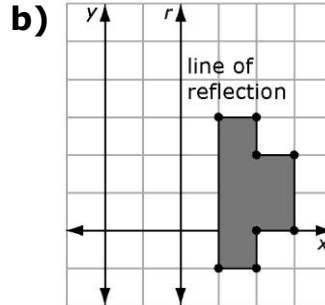
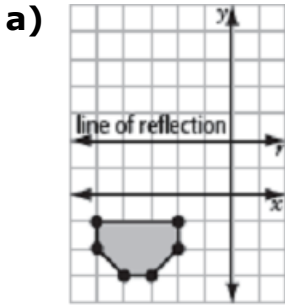
Drawing Reflections

A *reflection* is a mirror image in a line of reflection. A point and its reflection are the same distance from the line of reflection.

The line of reflection is a horizontal line at $y = 1$. Both N and N' are 1 unit from the line of reflection.



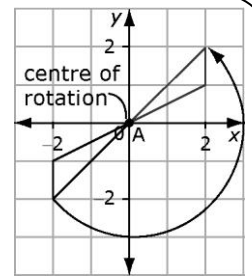
3. Draw the reflection image for each figure.



Drawing Rotations

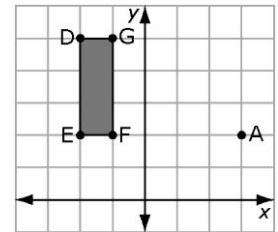
A *rotation* is a turn about a point or centre of rotation. The rotation can be clockwise or counter-clockwise.

The centre of rotation is at A.
The rotation is 180° counter-clockwise about A.



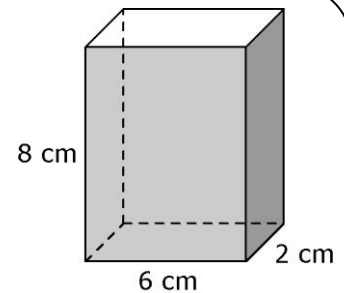
4. Figure DEFG is rotated 90° about its centre of rotation, A.

- a) Draw the rotation image D'E'F'G'.
- b) What are the coordinates of D', E', F', and G'?
- c) Describe the rotation if it had been in a counter-clockwise direction.

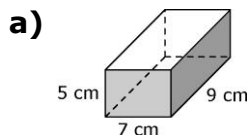


Using Surface Area

Surface area is the sum of the areas of all the faces of a 3-D object. A right rectangular prism has six faces. Three of its faces are different sizes. Front and back have the same area: $A = 6 \times 8 = 48$
Top and bottom have the same area: $A = 6 \times 2 = 12$
Two ends have the same area: $A = 2 \times 8 = 16$
Total surface area = $2(48 + 12 + 16) = 152$
The surface area is 152 cm².



5. Calculate the surface area of each right rectangular prism.



b) The dimensions are 3 m by 4 m by 6 m.

6. How many faces does each solid have?

- a) right triangular prism
- b) cylinder