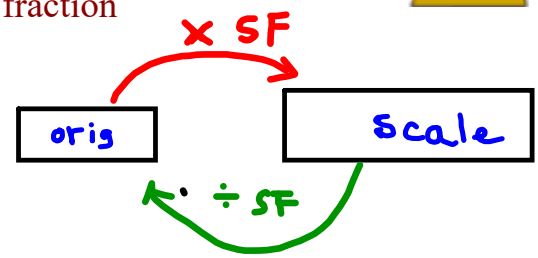
Overview

To Find **Scale Factor** = $\frac{\text{Scale Length}}{\text{Original Length}}$

Given scale factor As a decimal or fraction

Find the scale dimensions
original x scale factor



Find the original dimensions
scale ÷ scale factor

Scale Diagrams

For an enlargement or reduction, the scale factor is: $\frac{\text{Length on scale diagram}}{\text{Length on original diagram}}$

An enlargement has a scale factor > 1. A reduction has a scale factor < 1.

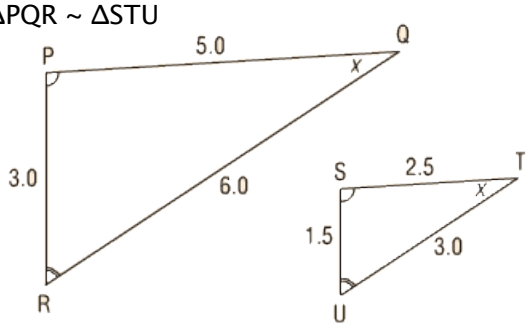
Similar Triangles

When we check whether two triangles are similar:

- their corresponding angles must be equal:
  $\angle P = \angle S$ and $\angle Q = \angle T$ and $\angle R = \angle U$
  or
- their corresponding sides must be proportional:
  $\frac{PQ}{ST} = \frac{QR}{TU} = \frac{PR}{SU}$

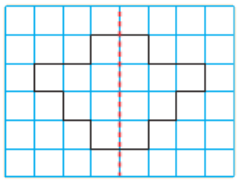
Any of the ratios $\frac{PQ}{ST}$, $\frac{QR}{TU}$, and $\frac{PR}{SU}$ is the scale factor.

Similarity Statements
$\Delta PQR \sim \Delta STU$



Line Symmetry

A shape has line symmetry when a line divides the shape into two congruent parts so that one part is the image of the other part after a reflection in the line of symmetry.



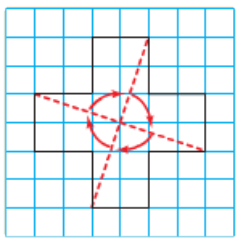
HORIZONTAL ——— y =

VERTICAL | x=

Rotational Symmetry

A shape has rotational symmetry when it coincides with itself after a rotation of less than 360° about its centre. The number of times the shape coincides with itself is the order of rotation.

The angle of rotation symmetry = $\frac{360°}{\text{the order of rotation}}$



Counterclockwise
Clockwise
Point of Rotation
Degree

1) The scale shown on a map of Canada is 1 cm = 120 km. On the map the distance between Vancouver and Calgary is 5.5 cm. How many kilometers apart are Vancouver and Calgary. (Show all work)

$SF = \frac{S}{O}$

$\frac{1}{120} = \frac{5.5}{x}$

$x = (120)(5.5)$

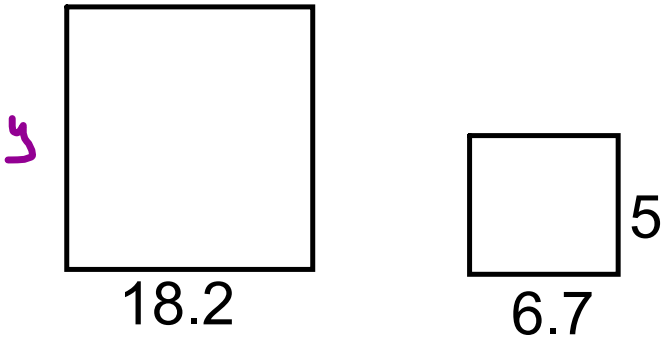
$x = 660\ km$

1cm = 120 km

(x5.5) (x5.)

5.5 cm = 660 km

What is the scale factor of the following:



$SF = \frac{S}{O}$

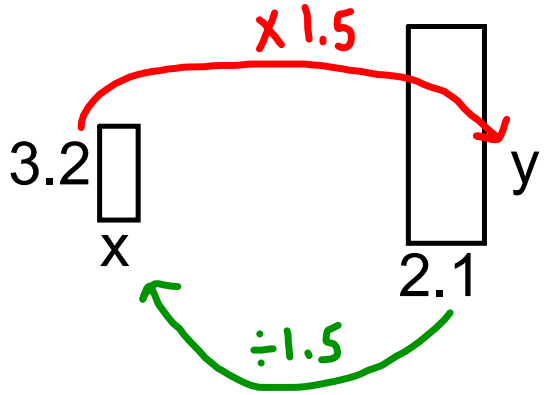
$= \frac{6.7}{18.2}$

$= 0.37$

$y = 5 \div 0.37$

$y = 13.51$

If the scale factor is 1.5 what is the dimension of the enlarged shape? (Show all work)

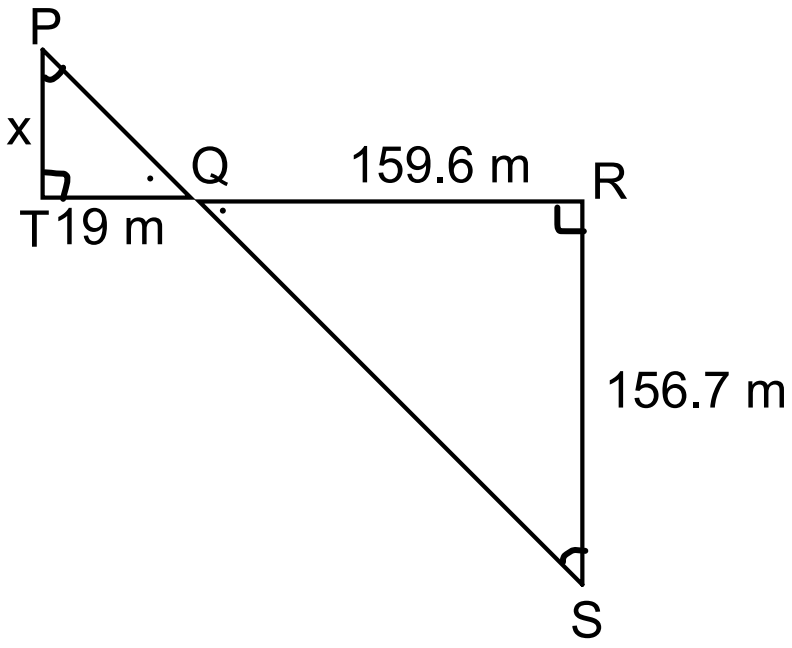


$y = 3.2 \times 1.5$

$y = 4.8$

$x = 2.1 \div 1.5$

$x = 1.4$



i) Prove & State the similarity statement

$\angle P = \angle S$

$\angle T = \angle R$

$\angle Q = \angle Q$

$\Delta PTQ \sim \Delta SRQ$ (AAA)

ii) State the ratios

iii) Fill in the ratios

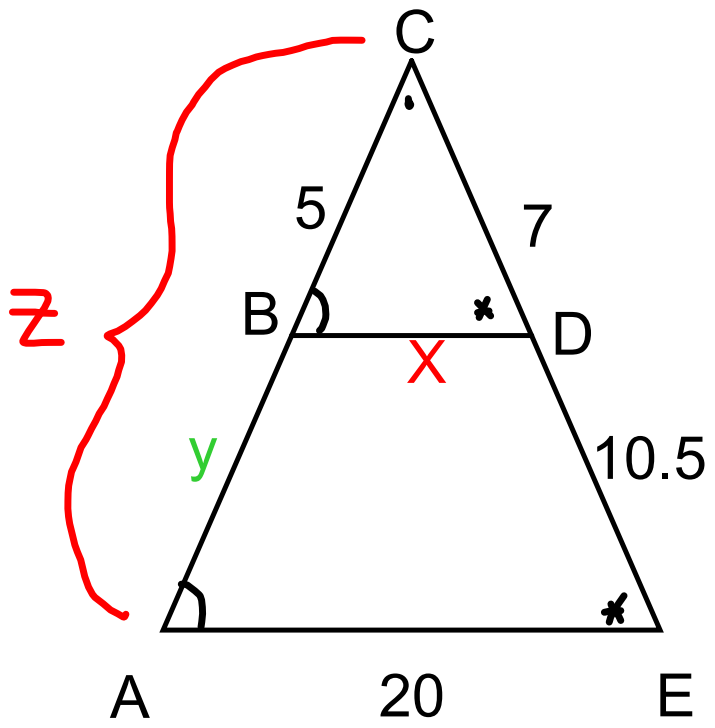
$$\frac{PT}{SR} = \frac{TQ}{RQ} = \frac{PQ}{SQ}$$

iv) Solve for x

$$\frac{x}{156.7} = \frac{19}{159.6}$$

$$x = \frac{19(156.7)}{159.6}$$

$$x = 18.7$$



$\angle C = \angle C$

$\angle A = \angle B$

$\angle E = \angle D$

$\triangle CAE \sim \triangle CBD$ (AA)

$\frac{BD}{AE} = \frac{CD}{CE}$

$\frac{x}{20} = \frac{7}{17.5}$

$x = \frac{20(7)}{17.5}$

$x = 8$

$\frac{CA}{CB} = \frac{CE}{CD}$

$\frac{z}{5} = \frac{17.5}{7}$

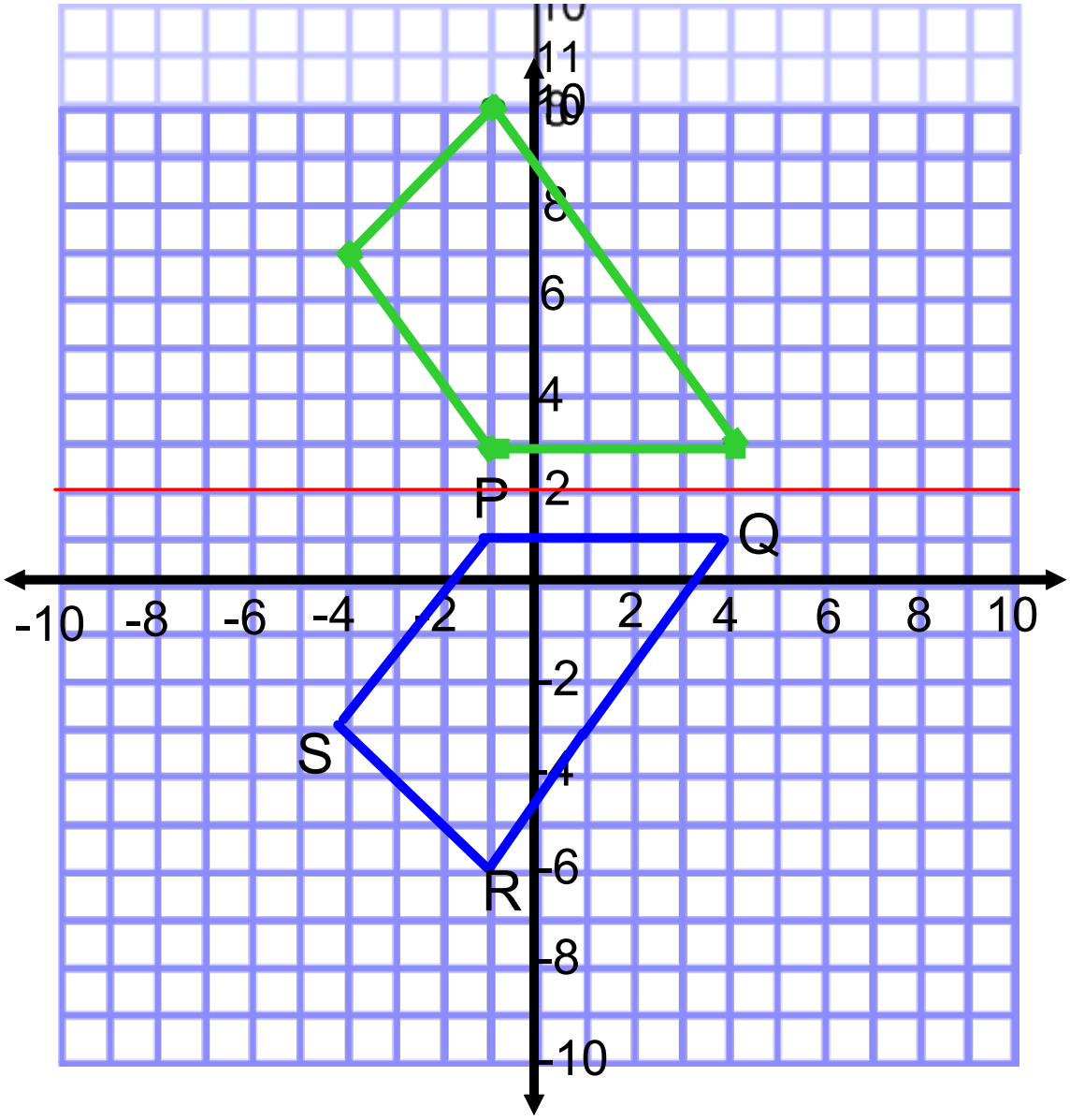
$z = \frac{5(17.5)}{7}$

$z = 12.5$

$y = 12.5 - 5$

$y = 7.5$

Use a line through 2 on the y-axis as a line of symmetry to complete the shape by drawing its other half. Write the coordinates of the new shape formed by P'Q'R'S' and its image.

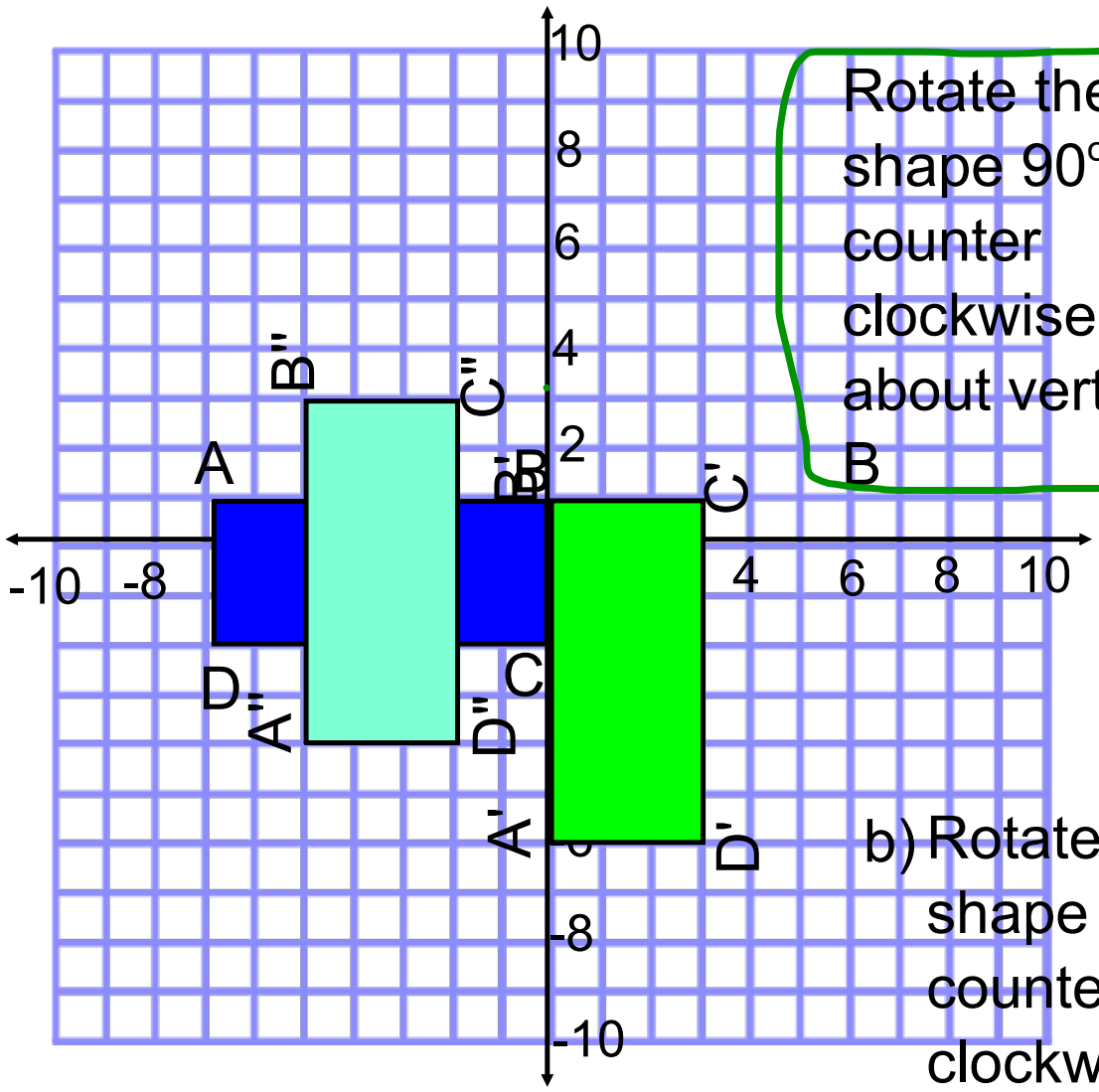


P' (-1,3)

Q' (4,3)

R' (-1,10)

S' (-4,7)



Rotate the shape 90° counter clockwise about vertex B

b) Rotate the shape 90° counter clockwise about the center

How many lines of symmetry?

5

What is the order of rotation?

5

What is the angle of rotation?

$= \frac{360}{5}$

72°

Homework

Test Tuesday

Unit Review Page 377-379

Questions 1 (l= 5cm , h= 3cm)
, 3, 6, 7,
9, 10, 12, 13,
15, 17

Page 375 question 13