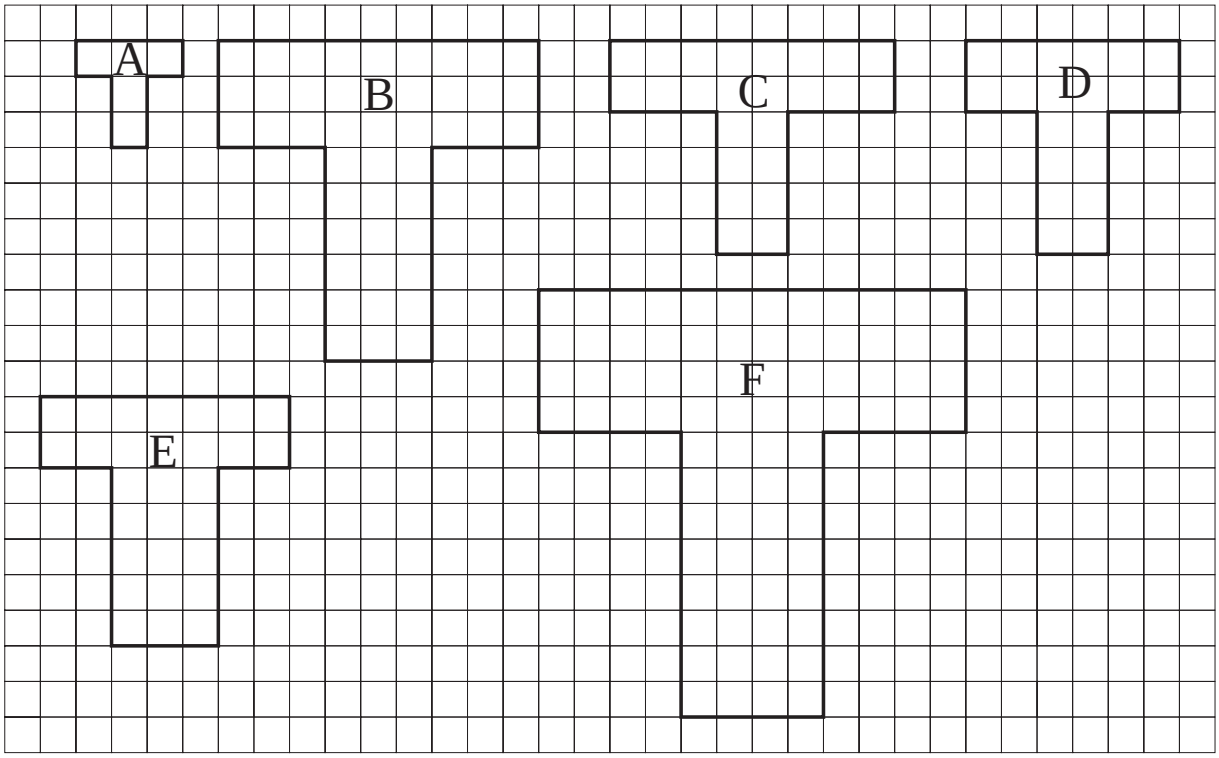
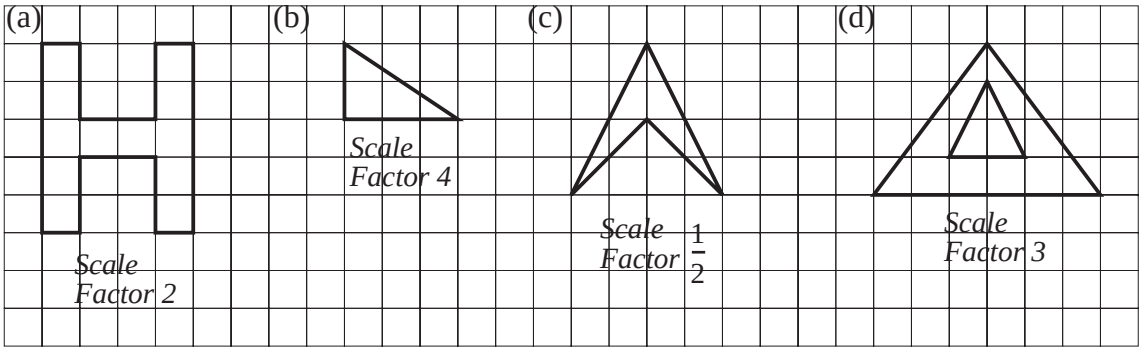
# UNIT 19 *Similarity* Extra Exercises 19.1

1. Which of the shapes below are enlargements of the shape A?
   State the scale factor for each shape that is an enlargement.

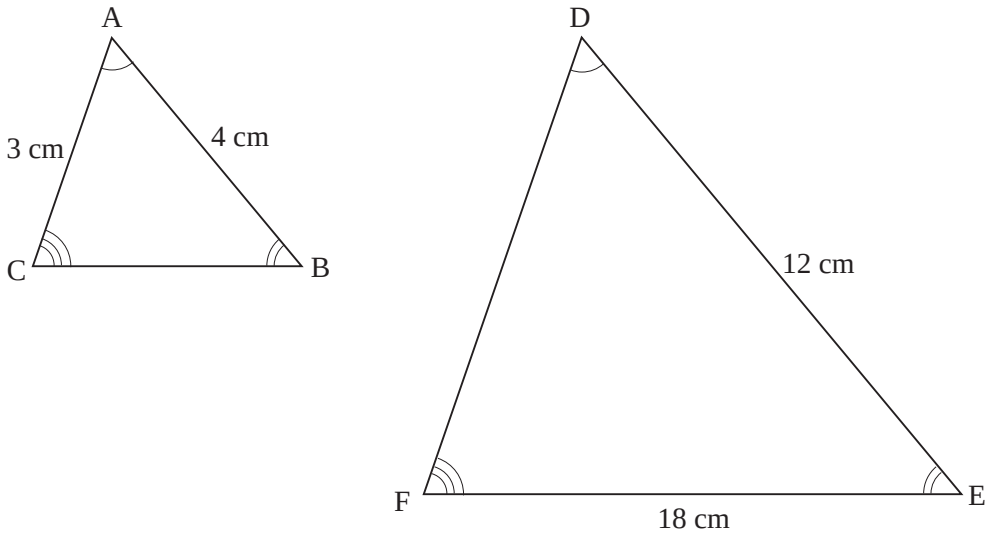



2. Enlarge each of the following shapes with the scale factor stated:



# UNIT 19 *Similarity* Extra Exercises 19.2

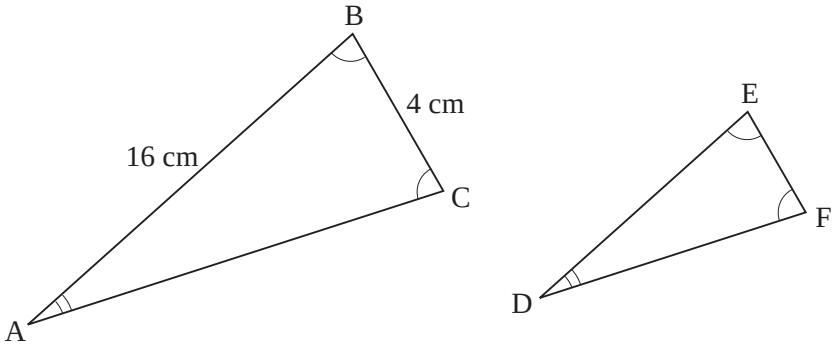
1. The following diagram shows 2 similar triangles:




Calculate the length of :

(a) D F (b) B C

2.

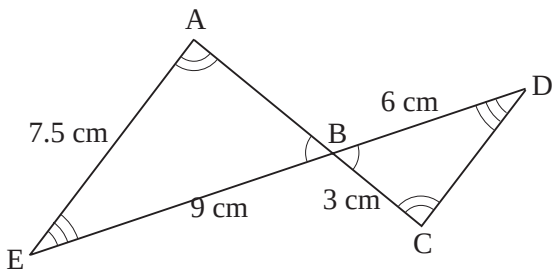



The diagram shows 2 similar isosceles triangles:

Calculate the length of E F, if:

(a) D E = 8 cm (b) D E = 12 cm (c) D E = 2 cm

3. Calculate the lengths of A B and C D in the diagram shown.

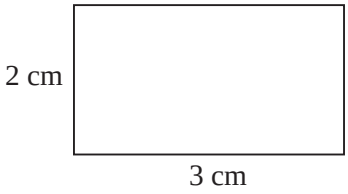


# UNIT 19 *Similarity* Extra Exercises 19.3

1. Calculate the area of the rectangle shown, if it is enlarged with a scale factor of:

   (a) 2 (b) 4

   (c) 5 (d) 8



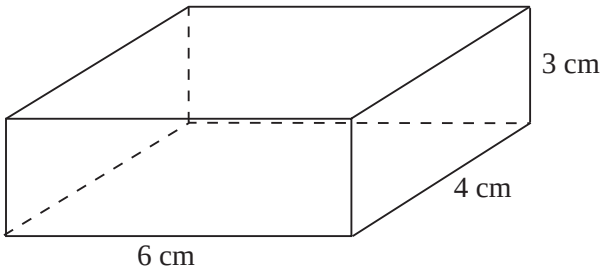

2. A triangle has an area of 18 $cm^2$. The triangle is enlarged with a scale factor of 3. What is the area of the enlarged triangle?

3. A parallelogram has an area of 5 $cm^2$. It is enlarged with a scale factor of 10. What is the area of the enlarged parallelogram?

4. After an enlargement, the area of a shape has increased from 6 $cm^2$ to 54 $cm^2$. What was the scale factor of the enlargement?

5. (a) Calculate the volume of the cuboid shown.

   (c) Calculate the volume of the cuboid if it is enlarged with scale factor 2.




6. A bottle has a volume of 300 ml. Calculate the volume of the bottle if it is enlarged with scale factor:

   (a) 2 (b) 6 (c) 10

# UNIT 19 *Similarity* Extra Exercises 19.4

1. A model house is made to a scale of 1 : 800. The model has height 7 cm. The volume of the model is 140 $cm^3$.

   Calculate:

   (a) the *height* of the actual house,

   (b) the *volume* of the actual house.

2. A map has a scale of 1 : 20 000. On the map a farm has an area of 40 $cm^2$. Calculate the actual area of the farm in:

   (a) $cm^2$ (b) $m^2$ (c) $km^2$

3. A map has a scale of 1 : 2500. The area of a garden is 8 $cm^2$ on the map. Calculate the actual area of the garden in $m^2$.

4. A model aeroplane is made to a scale of 1 : 40. The length of the model is 30 cm. The surface area of one wing of the model is 200 $cm^2$. The volume of the model is 1200 $cm^3$.

   Calculate:

   (a) the length of the aeroplane,

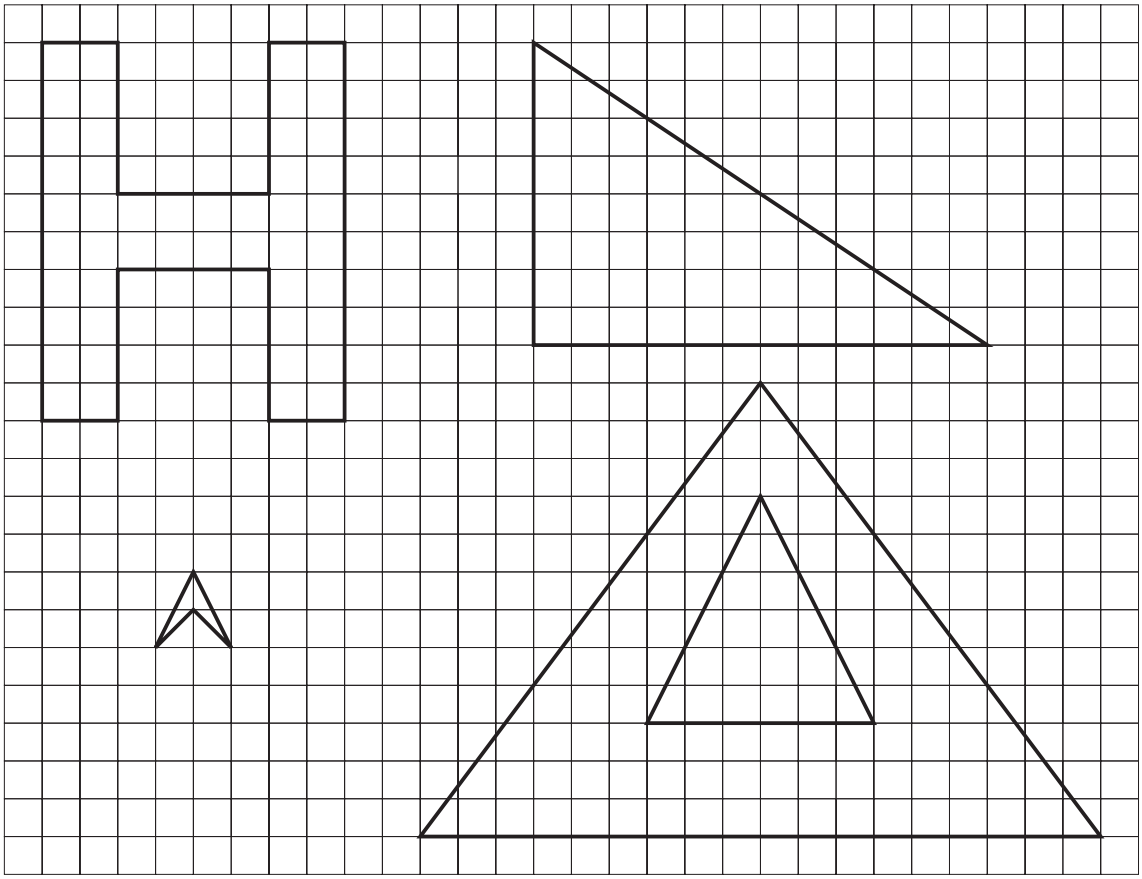
   (b) the area of a wing of the aeroplane,

   (c) the volume of the aeroplane.

5. A forest has an area of 400 $km^2$. Calculate the area of the forest in $cm^2$ on a map with a scale of 1 : 50 000.

# Extra Exercises 19.1 Answers

1. B $(\times 3)$, D $(\times 2)$, F $(\times 4)$

2. 

# Extra Exercises 19.2 Answers

1. (a) 9 cm (b) 6 cm

2. (a) 2 cm (b) 3 cm (c) $\frac{1}{2}$ cm

3. A B $= 4\frac{1}{2}$ cm, C D $= 5$ cm

# Extra Exercises 19.3 Answers

1. (a) 24 $cm^2$ (b) 96 $cm^2$ (c) 150 $cm^2$ (d) 384 $cm^2$
2. 162 $cm^2$
3. 500 $cm^2$
4. 3
5. (a) 72 $cm^3$ (b) 576 $cm^3$
6. (a) 2400 $cm^3$ (b) 64 800 $cm^3$ (c) 300 000 ml

# Extra Exercises 19.4 Answers

1. (a) 5600 cm or 5.6 m (b) 71 680 000 000 $cm^3$ or 71 680 $m^3$
2. (a) 16 000 000 000 $cm^2$ (b) 1 600 000 $m^2$ (c) 1.6 $km^2$
3. 5000 $m^2$
4. (a) 1200 cm (b) 320 000 $cm^2$ = 32 $m^2$
   (c) 76 800 000 $cm^3$
5. 1600 $cm^2$