Solutions

4. For each situation, identify whether you would use similar figures, congruent figures, or neither. Justify your answers.

a) a tile pattern on a floor

Can use either. More likely to go for congruent as they will all be the same shape and size.

b) a team's logo for the chest and shoulder patches of their jerseys

Similar. Logos will be different sizes but will retain the same shape (proportions).

c) a door frame and a window frame for the front of a house

Can use either or neither. Depends upon the shape of the windows.

d) a three-dimensional model of a skyscraper building

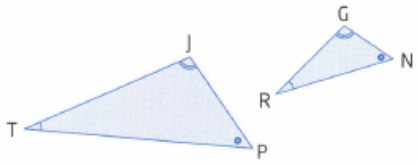
Similar. The model will be in proportion to the skyscraper, but a smaller, in proportion, version of it.

5. Name the similar triangles in each case. Write the letters so that equal angles appear in corresponding order.

a)

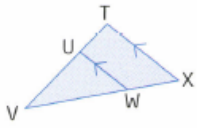
$\Delta ABC \sim \Delta KLM$

b)



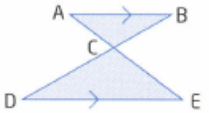
$\Delta JPT \sim \Delta GNR$

c)



$\Delta UWV \sim \Delta TXV$

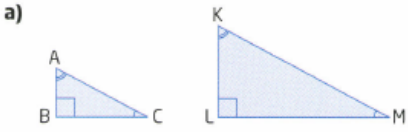
d)



$\Delta ABC \sim \Delta EDC$

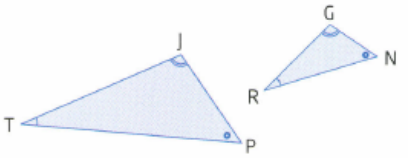
6. For each pair of similar triangles in question 5, write the equivalent ratios of side lengths.

a)



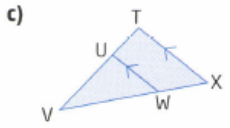
$$\frac{AB}{KL} = \frac{BC}{LM} = \frac{AC}{KM}$$

b)



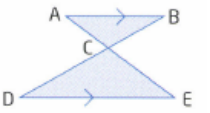
$$\frac{JP}{GN} = \frac{PT}{NR} = \frac{TJ}{RG}$$

c)



$$\frac{UW}{TX} = \frac{WV}{XV} = \frac{VU}{VT}$$

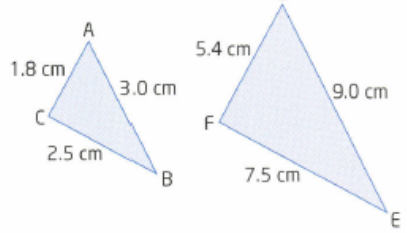
d)



$$\frac{AB}{ED} = \frac{BC}{DC} = \frac{AC}{CE}$$

8. Name a pair of similar triangles in each diagram and explain why they are similar.

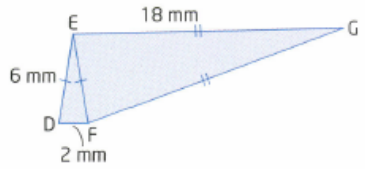
a)



$\triangle ABC \sim \triangle DEF$ (SSS~)

$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF} = \frac{1}{3}$$

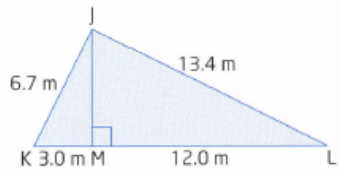
b)



$\triangle DEF \sim \triangle EGF$ (SSS~)

$$\frac{DE}{EG} = \frac{EF}{GF} = \frac{DF}{EF} = \frac{1}{3}$$

c)

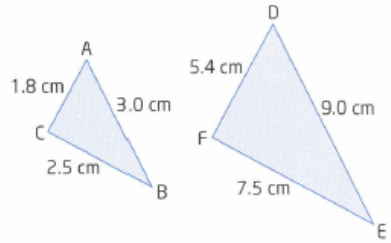


$\triangle JMK \sim \triangle JML$ (SSS~)

$$\frac{JM}{LM} = \frac{MK}{MJ} = \frac{KJ}{JL} = \frac{1}{2}$$

9. For each pair of similar triangles in questions 7 and 8, list all the pairs of corresponding angles and corresponding sides.

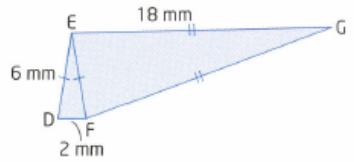
a)



$\angle A = \angle D, \quad \angle B = \angle E, \quad \angle F = \angle C$

$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$$

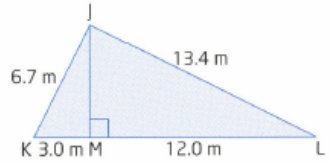
b)



$\angle D = \angle E, \quad \angle E = \angle G, \quad \angle F = \angle F$

$$\frac{DE}{EG} = \frac{EF}{GF} = \frac{DF}{EF}$$

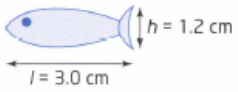
c)



$\angle J = \angle L, \quad \angle M = \angle M, \quad \angle K = \angle J$

$$\frac{JM}{LM} = \frac{MK}{MJ} = \frac{KJ}{JL}$$

17. A type of bass grows so that it retains its shape. Its length, height, and width all remain in the same proportion for its first few years of life. The average length, l, and height, h, of a baby bass are shown. The average width, w, of this type of bass is about half its height. If the bass triples in length each month for the first 3 months of life, find the dimensions of this bass after



a) 1 month **b)** 2 months

The bass triples in length each month so the scale factor is 3.

Multiply the previous month's distances by 3.

a) So after 1 month, measurements will be original distances x 3.

l = 3(3.0) h = 3(1.2) w = 3(1.2 ÷ 2)

l = 9cm h = 3.6cm w = 1.8cm

b) So after 2 months, measurements will be 1 month distances x 3.

l = 3(9) h = 3(3.6) w = 3(3.6 ÷ 2)

l = 27cm h = 10.8cm w = 5.4cm