

### 5.8 Solving Ratio Problems – Notes

Example (1): Find the value of each variable.

a)  $5:x = 40:56$

$$\begin{array}{r} 5 : x \\ 40 : 56 \end{array}$$

$$\frac{40x}{40} = \frac{280}{40}$$

$$\boxed{x = 7}$$

c)  $y:6 = 21:18$

$$\begin{array}{r} y : 6 \\ 21 : 18 \end{array}$$

$$\frac{18y}{18} = \frac{126}{18}$$

$$\boxed{y = 7}$$

b)  $49:35 = 14:n$

$$\begin{array}{r} 49 : 35 \\ 14 : n \end{array}$$

$$\frac{49n}{49} = \frac{490}{49}$$

$$\boxed{n = 10}$$

d)  $3:8 = z:64$

$$\begin{array}{r} 3 : 8 \\ z : 64 \end{array}$$

$$\frac{8z}{8} = \frac{192}{8}$$

$$\boxed{z = 24}$$

Example (2): This is a photo of a father and his daughter.

In the photo, the father's height is 8 cm and the daughter's height is 6 cm.

The father's actual height is 1.8 m.  $\times 100 = 180\text{cm}$

What is the actual height of his daughter?

father's : daughter's

$$\begin{array}{r} 8\text{cm} : 6\text{cm} \\ 180 : x \end{array}$$

$$\frac{8x}{8} = \frac{1080}{8}$$

$$\boxed{x = 135\text{cm}}$$

1.35m is the daughter's height

K H D M D C M M  
eters

Example (3): A bike is in fourth gear.

When the pedals turn 3 times, the rear wheel turns 7 times.

When the pedals turn twice, how many time does the rear wheel turn?

Pedal : rear wheel

$$\begin{array}{ccc} 3 & : & 7 \\ \swarrow & & \searrow \\ 2 & : & x \end{array}$$

$$\frac{3x}{3} = \frac{14}{3}$$

$$x = 4.\bar{6}$$

It turns  
about 4.7 times