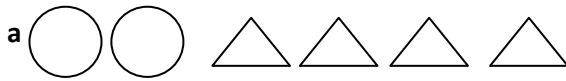


# Ratio, Proportion and Rates

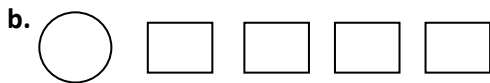
## A MATH Review:

**INSTRUCTIONS:** Be sure to read each question carefully and make sure you understand what the question is asking. Write full sentences where appropriate. Box your answers.

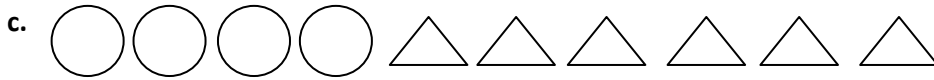
1. Write each ratio in three different ways. Write your answer in simplest form.



total to circles **3:1 3 to 1 3/1**



squares to circles **4:1 4 to 1 4/1**



circles to total **2:5 2 to 5 2/5**

d. 6 black marbles, 16 blue marbles, 5 white marbles, and 11 violet marbles

Find the ratio of all the marbles to the white marbles **38:5 38 to 5 38/5**

e. 17 black marbles, 8 brown marbles, 13 white marbles, and 12 violet marbles

Find the ratio of all the marbles to brown marbles **25:4 25 to 4 25/4**

f. 4 black marbles and 15 brown marbles. Find the ratio of black marbles to brown marbles.

**4:15 4 to 15 4/15**

g. 10 blue marbles, 18 brown marbles, and 13 violet marbles. Find the ratio of brown marbles to

all the marbles. **18/51 18 to 51 18/51**

2. Simplify the following ratios:

a. 9:12

**3:4**

b. 14 to 7

**2 to 1**

c. 16/4

**4/1**

d. 2:46

**1:23**

e. 9 to 9

**1:1**

f. 40/16

**5/2**

3. Find the missing numbers.

a. 4:5 = **40**:50

b. 10:3 = 20:**6**

c. 4:3 = **8**:6

d. 2:1 = 10:**5**

e. 21:6 = **7**:2

f. 45:**36** = 5:4

**4. Express each of the following situations using a rate in simplest form. Show all your working out. Be sure to include a sentence.**

a. A 20L can of paint cost \$80. What is the price per litre?

**The price for a can of paint is \$4/L.**

b. What is the cost per meter of 7m of rope that costs \$21?

**The cost of rope is \$3/m.**

c. What is the average speed of a train that travelled 600km in 3 hours?

**The average speed of a train is 200km/hr.**

d. What is the cost per metre of 7m of rope that costs \$21?

**The cost of rope is \$3/m.**

e. A driver takes 10 hours to travel from Sydney to Melbourne. What is the average speed for this 880km trip?

**The average speed for when travelling by car from Sydney to Melbourne is 88km/hr.**

f. The UAE needs 81 runs in the next 9 overs to win a one-day cricket match. What run rate is required?

**The run rate required to win a one-day cricket match is 9 runs/over.**

g. The 1400km plane ride from Sharjah to Egypt takes 3 hours. What is the average speed of the aircraft?

**The average speed of the aircraft flying from Sharjah to Egypt is 466.7 km/hr.**

h. A patient's heart beats 360 times in 5 minutes. What is the patient's heart rate in beats per minute?

**A patients heart will beat 72 beats/min.**

**5. Convert the following to a correct ratio. Simplify the ratios. Show your working out.**

a. 4 m to 1.2 km =

**1:300**

b. 25 red balloons to 64 blue balloons

**25:64**

c. 2.3 kg to 2300g

**1:1**

d. 4.3 L to 224 ml

**1075:56**

e. 15 secs to 1.5 mins

**1:90**

f. 3.8kg to 7.5 kg

**3.8:7.5**

g. 30 mins and 3 hrs

**1:6**

h. 119g and 1.4kg

**119:1400**

i. 120 secs and 2 hours

**1:60**

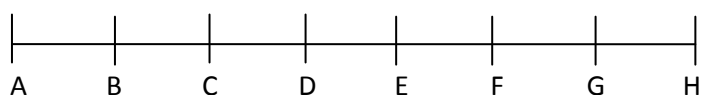
Find the speed of the following units indicated:

a. A snake slithers 20metres in 30 seconds **40 m/min**

b. An ant travels 20 metres in 3 minutes **666.7 cm/min**

6. Which point divides the lines AH in the following ratios? Write the letter in the space provided.

a.



- a. 20:8 **F**      b. 2:12 **B**      c. 8:6 **E**      d. 12:2 **G**      e. 4:10 **C**      f. 9:12 **D**

b.



- a. 1:6 **B**      b. 3:4 **D**      c. 4:3 **E**      d. 2:5 **C**      e. 12:2 **G**      f. 10:4 **F**

7. Show your working out by finding the number of cans for white paint if the ratio of blue (b) paint to white (w) paint in a paint store is 4:6

**HINT: Step 1:** write out a ratio for each lettered question as a fraction.

**Step 2:** solve for the missing value.

i) 40 cans of blue paint

ii) 100 cans of blue paint

iii) 250 paint cans in total

simplify  $4b:6w$  to  $2b:3w$

$2b:3w$

$2:3 = 40:60$

$2:3 = 100:150$

**I will need 60 cans of white paint. I will need 150 cans of white paint.**

1. Find total parts in  $2:3=5$
2. Divide total paint cans 250 by total parts  $2+3=5$ ; answer 50
3. Use this as your multiplier to original ratio  $2:3$  ( $2 \times 50, 3 \times 50$ )
4. 100 cans of blue and **150 cans of white**

a. Find the number of paint cans in total if there are

i) 15 cans of white paint

ii) 300 cans of blue paint

**Key word: total; use ratio as fraction**

$2b:3w = \underline{\quad}b:15w$

**10 blue cans: 15 white cans**

**Total 25 paint cans**

**Key word: total; use ratio as fraction**

$2b:3w = 300b:\underline{\quad}w$

**300 blue cans: 450 white cans**

**Total 750 paint cans**

8. Ms. Claire would like to make some of her killer punch for her friends this weekend. She is going to make **5 litres** of punch. However, Ms. Claire is unsure of how many millilitres (mL) of each juice is required to make the punch. She has 4 parts lemon, 1 part sprite, 2 parts apple, and 3 parts orange juice. How many mL's of **each type of juice** does Ms. Claire need if her juice is mixed in the ratio of **4:1:2:3**.

**1. Convert 5 litres to litres. Question is asking how many mL of juice is required for Ms. Claire's punch. (5000ml=5L)**

**2. Find the total number of parts that are need for the punch (add the ratios 4:1:2:3 = 10 PARTS)**

**3. Take number of litres required (5000ml) and divide by number of parts (10)=  $5000/10 = 500\text{ml}$**

**- 500ml is required for each part.**

**4. Use this as number (500ml) as your multiplier to original ratio 4:1:2:3 to get the total amount of mL's needed for each juice.**

**5.  $500 \times 4 = 2000\text{ml}$  lemon juice**

**$500 \times 1 = 500\text{ml}$  sprite**

**$500 \times 2 = 1000\text{ml}$  apply juice**

**$500 \times 3 = 1500\text{ml}$  orange juice**

**6. Check if you are correct by adding the amount of juice together.**

**Total should equal 5000mL or 5L.**