

# Comparing Quantities

## Worksheet 1 (Comparing Quantities using Ratio and Proportion)

1 State whether the statements given below are true or false.

- (i) To compare two quantities, their units must be same.
- (ii) Order is not important in ratios.
- (iii) Ratio has units.
- (iv) Two ratios can be compared by converting them to like fractions.
- (v) If  $a : b$  and  $b : c$  are in proportion such that  $b^2 = ac$ , then  $b$  is called the mean proportional of  $a$  and  $c$ .
- (vi) Two ratios are said to be equivalent, if antecedent and consequent of one is  $k$  times the antecedant and consequent of other.

2 Write the ratio of the quantities given below in their simplest form.

- (i) 50 m to 5 km
- (iii) ₹ 8 to 800 p
- (v) 2 L to 200 mL
- (vii) 7 yr to 6 months
- (ix) 7 km to 14 m
- (xi) 9 months to 2 yr
- (xiii) 2 days to 14 h

$$\begin{aligned}
 &= \underline{\underline{1:100}} \\
 &= \underline{\underline{1:1}} \\
 &= \underline{\underline{10:1}} \\
 &= \underline{\underline{14:1}} \\
 &= \underline{\underline{500:1}} \\
 &= \underline{\underline{3:8}} \\
 &= \underline{\underline{24:7}}
 \end{aligned}$$

- (ii) 3 h to 30 min
- (iv) 12 cm to 12 m
- (vi) 50 gm to 1 kg
- (viii) 30 mL to 3 L
- (x) 1 min to 90 s
- (xii) 20 kg to 1400 g
- (xiv) 3000 paise to ₹ 9

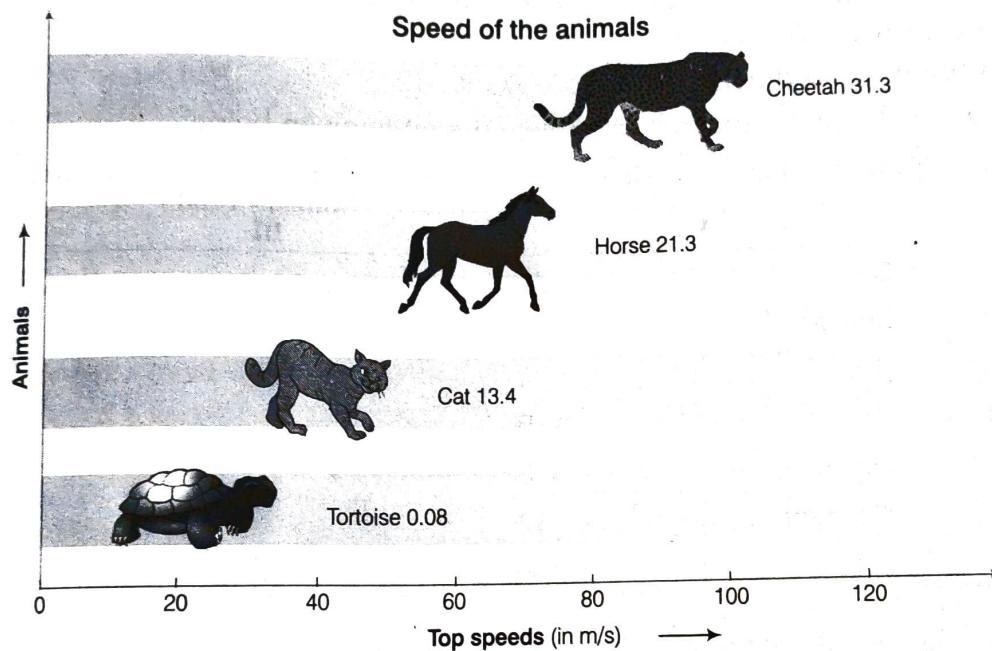
$$\begin{aligned}
 &= \underline{\underline{6:1}} \\
 &= \underline{\underline{1:100}} \\
 &= \underline{\underline{1:20}} \\
 &= \underline{\underline{1:100}} \\
 &= \underline{\underline{2:3}} \\
 &= \underline{\underline{10:7}} \\
 &= \underline{\underline{10:3}}
 \end{aligned}$$

### Multiple choice questions

- (i) Ratio is a method of comparing two quantities by
  - (a) addition
  - (c) division
  - (b) subtraction
  - (d) None of these
- (ii) If  $p : r :: q : s$ , then the correct statement is
  - (a)  $qr = ps$
  - (c)  $qrs = p$
  - (b)  $pqr = s$
  - (d)  $pq = rs$

- (iii) In a school, the total number of students are 3200, out of which 1800 are boys and remaining are girls. The ratio of girls to boys is  
 (a) 3 : 1  
 (b) 9 : 7  
 (c) 7 : 9  
 (d) 1 : 3
- (iv) The ratio of the heights of A and B is 4 : 3. If B is 1.2 m tall, then the height of A is  
 (a) 0.9 m  
 (b) 1.6 m  
 (c) 1.8 m  
 (d) None of these
- (v) The ratio of lemon to water in a glass of lemon juice is 3 : 5. In order to make 4 glasses, the number of cups of water to be used is  
 (a) 10  
 (b) 15  
 (c) 20  
 (d) 25
- (vi) If a train 100m long takes 10s to cross a telegraph post, then the time taken to cross a bridge of length 100m is  
 (a) 12s  
 (b) 15s  
 (c) 20s  
 (d) 24s

4 Study the following graph carefully and then answer the given questions.



- (i) Find the ratio of speeds of Cheetah and Tortoise.  $1565 : 4$
- (ii) What is the distance travelled by Cheetah in 1 min?  $1878 \text{ m}$
- (iii) Find the ratio of speeds of Cat and Horse.  $134 : 213$

5 Answer the following questions.

- (i) Divide ₹ 108 in the ratio 4 : 5.
- (ii) If the cost of an eraser is 80 p and the cost of a pencil is ₹ 2, then find the ratio of their costs in simplest form.
- (iii) The ratio of male and female workers in a factory is 4 : 3. If there are 104 male workers, then find the number of female workers in the factory.
- (iv) In a Science lab, there are 4 test tubes for every 8 students. How many test tubes are needed for 40 students?
- (v) The ratio of monthly income to the savings of a family is 7 : 2. If the savings is ₹ 500, then find the monthly income.

IV)  $8 \text{ students} = \boxed{2}$

$\frac{1}{2} \text{ test tube}$

$1 \text{ student} =$

$\frac{1}{2} \text{ test tube}$

$40 \text{ students} = \frac{1}{2} \times 40 = 20 \text{ test tubes}$

$\Rightarrow$  So 20 test tubes are needed for 40 students.

V) Ration of monthly income to savings

$\Rightarrow 7:2$

$\Rightarrow \text{Savings} = 500 \text{ rupees}$

$\Rightarrow ₹ 500 \div 2 = ₹ 250$

$\Rightarrow ₹ 250 \times 7$

$\Rightarrow$  So 1750 rupees is the monthly income of the family.

$$\begin{array}{r} 3 \\ \times 250 \\ \hline 1750 \end{array}$$

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5.  $\Rightarrow$  Total parts = 4 + 5 = 9

$$\Rightarrow \frac{4}{9} + \frac{5}{9}$$

$$\Rightarrow 108 \times \frac{4}{9} \text{ or } 108 \times \frac{5}{9}$$

$$\Rightarrow \text{₹}48 \text{ or } \text{₹}60$$

$$\therefore \Rightarrow \text{₹}48 \text{ or } \text{₹}60$$

Cost of eraser = 80p

Cost of pencil = 22 p

10.5

~~£2  
200  
10.5~~

$\boxed{£2 = 200p}$

(ii) Ratio of male to female workers

$$\Rightarrow 4:3$$

$\Rightarrow$  Male worker = 104 workers

$$\Rightarrow 8 \text{ So, } 104 \div 4 = 26$$

$$\Rightarrow 26 \times 3 = 78 \text{ workers}$$

$\Rightarrow$  There are 78 workers