



SATISH CHANDRA MEMORIAL SCHOOL
Class: VIII Ch: 13(Direct & Inverse proportions)
Worksheet 1

1. A train is moving at a uniform speed of 100 km/h. How far will it travel in 20 minutes?
2. If the cost of 20 books is ₹ 180, how much will 15 books cost?
3. If 3 kg of sugar contains 9×10^8 crystals. How many sugar crystals are there in 4 kg of sugar?
4. Complete the table if x and y vary directly.

x	3.5	4	7.5	–
y	–	8	–	15

Solution: 1

Let the distance travelled by train in 20 minutes be x km.

Distance travelled (in km)	100	x
Time taken (in minutes)	60	20

Since the speed is uniform, the distance travelled will be directly proportional to time.

$$\begin{aligned}\therefore \frac{100}{60} &= \frac{x}{20} \\ \Rightarrow 60 \times x &= 20 \times 100 \\ \therefore x &= \frac{20 \times 100}{60} = \frac{100}{3} \text{ km} \\ &= 33\frac{1}{3} \text{ km.}\end{aligned}$$

Hence, the required distance is $33\frac{1}{3}$ km.

Solution: 2

Let the required cost be ₹ x .

Here, the two quantities vary directly.

Number of books	20	15
Cost (in ₹)	180	x

$$\begin{aligned}\frac{20}{180} &= \frac{15}{x} \\ \Rightarrow 20 \times x &= 15 \times 180 \\ \therefore x &= \frac{15 \times 180}{20} = ₹ 135\end{aligned}$$

Hence, the required cost = ₹ 135

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Solution: 3

Let the required number of crystals be x .

Sugar (in kg)	3	4
Number of crystals	9×10^8	x

Since the two quantities are directly proportional to each other.

$$\begin{aligned} \therefore \frac{x_1}{y_1} &= \frac{x_2}{y_2} \\ \Rightarrow \frac{3}{9 \times 10^8} &= \frac{4}{x} \\ \Rightarrow 3 \times x &= 4 \times 9 \times 10^8 \\ \therefore x &= \frac{4 \times 9 \times 10^8}{3} \\ &= 12 \times 10^8 = 1.2 \times 10^9 \end{aligned}$$

Solution: 4

Let the blank spaces be filled with a , b and c .

x	3.5	4	7.5	c
y	a	8	b	15

Since x and y vary directly.

$$\begin{aligned} \therefore \frac{x_1}{y_1} &= \frac{x_2}{y_2} & \therefore b &= \frac{8 \times 7.5}{4} = 15 \\ \Rightarrow \frac{3.5}{a} &= \frac{4}{8} & \frac{4}{8} &= \frac{c}{15} \\ \Rightarrow 4 \times a &= 3.5 \times 8 & \Rightarrow 8 \times c &= 4 \times 15 \\ \therefore a &= \frac{3.5 \times 8}{4} = 7 & \therefore c &= \frac{4 \times 15}{8} = 7.5 \\ \frac{4}{8} &= \frac{7.5}{b} \\ \Rightarrow 4 \times b &= 8 \times 7.5 \end{aligned}$$

Hence, the required values are $a = 7$, $b = 15$ and $c = 7.5$.