NCERT SOLUTIONS OF Direct Proportion Exercise 1

Question 1

Following are the car parking charges near a railway station upto

4 hours Rs 60

8 hours Rs 100

12 hours Rs 140

24 hours Rs 180

Check if the parking charges are in direct proportion to the parking time.

Answer

We know that two quantities are in direct proportion if whenever the values of one quantity increase, then the value of another quantity increase in such a way that ratio of the quantities remains same

Here The charges are not increasing in direct proportion to the parking time because

$4/60 \neq 8/100 \neq 12/140 \neq 24/180$

Question 2

A mixture of paint is prepared by mixing 1 part of red pigments with 8 parts of base. In the following table, find the parts of base that need to be added.

Parts of red pigments	1	4	7	12	20
Part of base	8				

Answer

The ratio of Parts of red pigments and part of base = 1/8

Parts of red pigments	1	4	7	12	20
Part of base	8	a	b	c	d

Now Parts of red pigments and part of base are in direct proportion

Now according to law of direct proportion
4/a =1/8
a=32

7/b= 1/8
b=56

12/c=1/8
c=96

20/d=1/8
d= 160

So results is

Parts of red pigments	1	4	7	12	20
Part of base	8	32	56	96	160

Question 3

In Question 2 above, if 1 part of a red pigment requires 75 mL of base, how much red pigment should we mix with 1800 mL of base?

Answer: Let a be the red pigment part required with 1800ml of base,the as per law of direct proportion

1/75=   a/1800

a=24

Question 4

A machine in a soft drink factory fills 840 bottles in six hours. How many bottles will it fill in five hours?

Answer: Let x bottles will be filled in 5 hours,

Now hours and amount of bottles are in direct proportion

Then as per law of direct proportion

840/6= a/5

a=700

Question 5

 A photograph of a bacteria enlarged 50,000 times attains a length of 5 cm. What is the actual length of the bacteria? If the photograph is enlarged 20,000 times only, what would be its enlarged length?

Answer

Let x be the actual length of bacteria

Now length of bacteria and enlargement are in direct proportion, so

5/50000= x/1

Or x=1/10000 cm

Now let us assume y be the length when it is enlarged 20,000

Again as per law of direct proportion

y/20000= 5/50000

y= 2cm

Question 6

 In a model of a ship, the mast is 9 cm high, while the mast of the actual ship is 12 m high. If the length of the ship is 28 m, how long is the model ship?

Answer: The model of the ship and actual ship are in direct proportion

Let x be the length of the model of the ship, then

9/12= x/28

X= 21 cm

Question 7

 Suppose 2 kg of sugar contains 9 × 106 crystals. How many sugar crystals are there in (i) 5 kg of sugar? (ii) 1.2 kg of sugar?

Answer

Amount of sugar in kg is direct proportion to amount of crystals

  i)   Let x be the crystals in 5k,then
          2/(9×106)=   5/x
          x=45 × 54 crystals
  ii)   Let y be the crystals in 1.2k,then
          2/(9×106)=   1.2/x
          x=10.8 × 53 crystals

Question 8

 Rashmi has a road map with a scale of 1 cm representing 18 km. She drives on a road for 72 km. What would be her distance covered in the map?

Answer:

Length of scale and distance covered are in direct proportion

Let x be the scale in map

1/18-=x/72

x=4 cm

Question 9

 A 5 m 60 cm high vertical pole casts a shadow 3 m 20 cm long. Find at the same time

(i) the length of the shadow cast by another pole 10 m 50 cm high

(ii) the height of a pole which casts a shadow 5m long.

Answer:

Length of the pole and length of shadow are in direct proportion

Also let us convert everything in meter

i) Let x be the length of the shadow cast by another pole 10 m 50 cm high
6.5/3.2= 10.5/x
Or x =6 m

ii) Let x be the length of the shadow cast by another pole 10 m 50 cm high
6.5/3.2= 5/x
Or x =8.75 m

Question 10

 A loaded truck travels 14 km in 25 minutes. If the speed remains the same, how far can it travel in 5 hours?

Answer

As speed is same, then distance travelled and time taken will be in direct proportion

So let us assume x be the distance travelled in 5 hours or 300 minutes

14/25= x/300

x=168 km