Parts and Wholes

Question 1: (Page 50)

a) Draw a rectangle of length 9 cm and width 6 cm. Divide it into three equal parts and complete the flag.

b) The top one-third of our flag is saffron (or orange). What is the colour of the middle one-third of the flag?

c) Where will you draw the Ashoka chakra?

d) How much of the flag will you colour green?

e) Is the white colour now less than $\frac{1}{3}$ of the flag? Why?

Answer:

a) The complete flag is shown below.

b) The middle one-third of the flag is coloured in white.

c) The Ashoka chakra is in the middle of the white part.

d) One-third portion the flag is coloured in green.

e) The flag is divided into 3 equal parts. Each of the three colours is $\frac{1}{3}$ of the flag. But in the white portion the Ashok chakra has been draw. So, the white colour is less than $\frac{1}{3}$ of the flag.

Question 2:

a) Now look at this flag. How much of it is black?

b) The green part of the flag can be written as.....

c) Is red less than one-third of the flag? Why?

Answer:

a) The flag is divided into three equal parts. Each part is one-third of the flag. Therefore, the one-third of the flag is black.

b) Since each part is one-third of the flag, the green part of the flag is one-third of the flag.

c) There is a white emblem in the red coloured portion. Therefore, the red colour is less than one-third of the fag.

Question 3:

This is the flag of Myanmar, our neighbour.

a) Is blue more than one-fourth of the flag or less?

b) Guess how much of the flag is red. Is it more than $\frac{1}{2}$? Is it more than three-fourths?

Answer:

c) Observe the given flag, the blue portion is less than one-fourth of the flag.

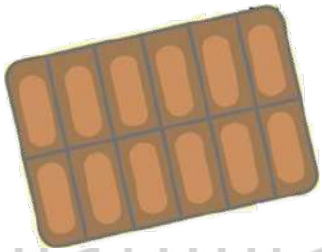
d) The blue portion is less than one-fourth of the flag. Therefore, the red portion of the flag is more than $\frac{1}{2}$, even it is more than three-fourths.

Practice Time

Question 4: (Page 52)

A) Chocolate bar

a) Manju had a chocolate. She gave one-fourth of it to Raji, one-third to Sugatha and one-sixth to Sheela. She ate the remaining part. How many pieces of chocolate did each get?



b) What part of the chocolate did Manju eat?

Answer:

a) The chocolate is divided into 12 equal pieces.

Step 1: Since Raji got one-fourth of the whole chocolate, multiply $\frac{1}{4}$ by 12 to find the share of Raji.

$$\frac{1}{4} \times 12 = \frac{12}{4} = 3$$

Therefore, Raji got 3 pieces of the chocolate.

Step 2: Since Sugandha got one-third of the whole chocolate, multiply $\frac{1}{3}$ by 12 to find the share of Sugandha.

$$\frac{1}{3} \times 12 = \frac{12}{3} = 4$$

Therefore, Sugandha got 4 pieces of the chocolate.

Step 3: Since Sheela got one-sixth of the whole chocolate, multiply $\frac{1}{6}$ by 12 to find the share of Sheela.

$$\frac{1}{6} \times 12 = \frac{12}{6} = 2$$

Therefore, Sheela got 2 pieces of the chocolate.

Step 4: Since Manju ate the remaining part, add the shares of each of her friends and then subtract the result from 12 to find the share of Manju.

$4 + 3 + 2 = 9$

$12 - 9 = 3$

Therefore, Manju got 3 pieces of the chocolate.

b) Since Manju got 3 pieces out of 12 pieces of the chocolate, divide 3 by 12 to find the portion of the whole chocolate that Manju ate.

$$\frac{3}{12} = \frac{1}{4}$$

Therefore, Manju got one-fourth of the chocolate.

Question 5:

B) Colour the hats

a) Colour $\frac{1}{3}$ of the hats red. Colour three-fifth hats blue.

b) How many hats did you colour red?

c) How many hats did you colour blue?

d) What part of the hats are not coloured?

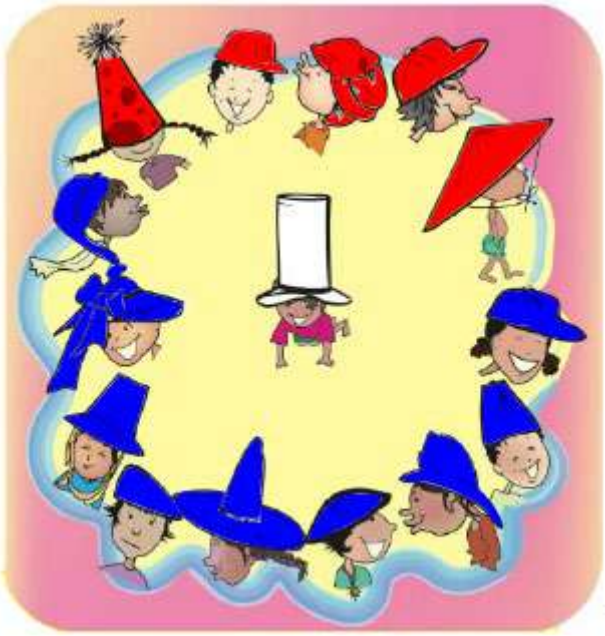
Answer:

a) There are 15 hats in the given picture. Therefore,

$\frac{1}{3}$ of $15 = \frac{1}{3} \times 15 = 5$

Three-fifth of $15 = \frac{3}{5} \times 15 = \frac{3 \times 15}{5} = 9$

So, colour 5 hats in red, and 9 hats in blue



b) Five hats are coloured in red.

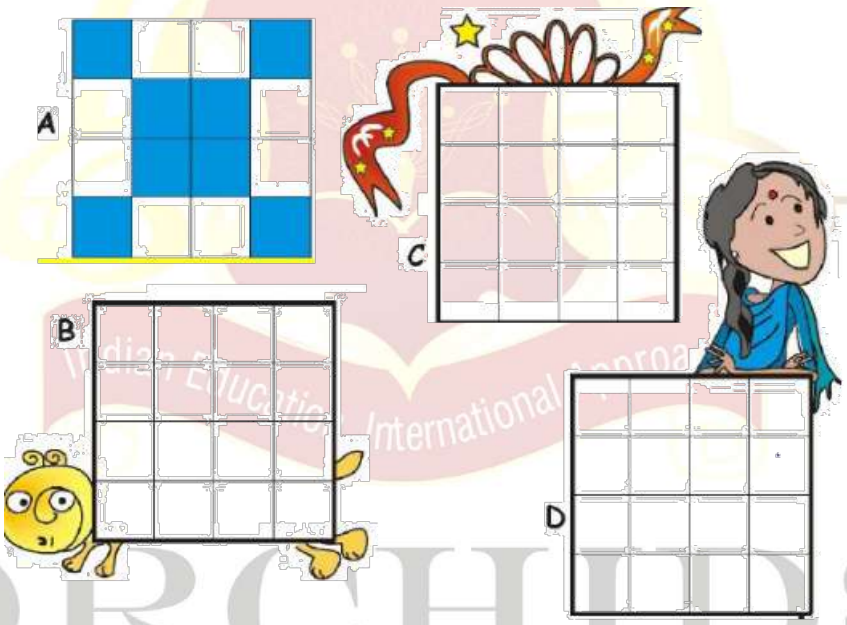
c) Nine hats are coloured in blue.

d) One out of fifteen hats is not coloured. Therefore, $\frac{1}{15}$ hats are not coloured.

Patterns in Parts

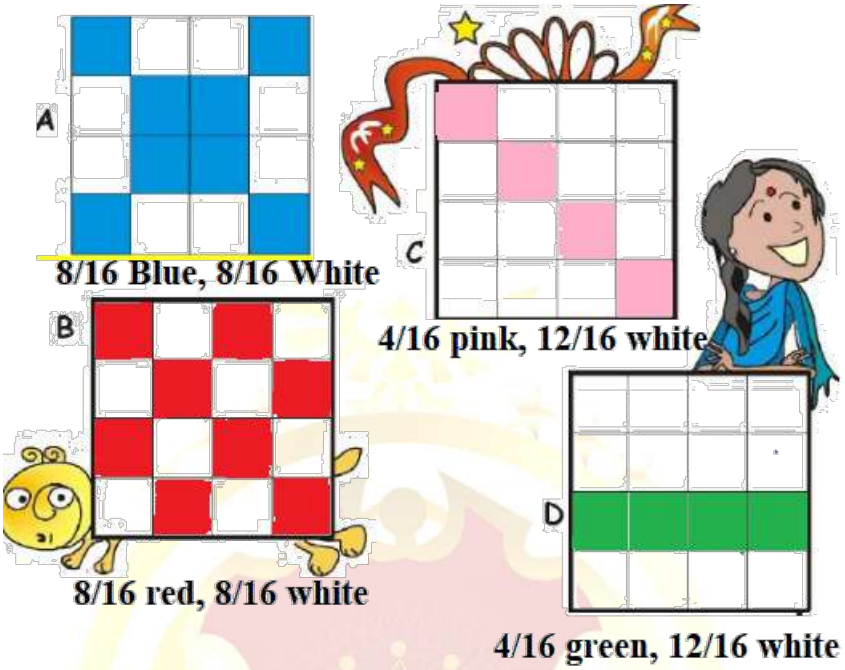
Question 6: (Page 57)

Make different patterns by colouring some squares in the grids B, C, D. What part of the grid did you colour? What part of the grid remained white? Write.



Answer:

Do as directed. Answers may vary. A sample answer is:



Question 7:

Look at grid A again. Is the grid coloured:

a) $\frac{1}{2}$ Blue, $\frac{1}{2}$ white?

b) $\frac{2}{4}$ Blue, $\frac{2}{4}$ white?

c) $\frac{3}{8}$ Blue, $\frac{3}{8}$ white?

d) $\frac{4}{8}$ Blue, $\frac{4}{8}$ white?

Mark (×) on the wrong answer.

Answer:

Observe the grid A, it is coloured $\frac{8}{16}$ blue, and $\frac{8}{16}$ white.

Express $\frac{8}{16}$ as equivalent fractions by dividing the numerator and denominator with the same number.

$$\frac{8}{16}=\frac{8\div 8}{16\div 8}=\frac{1}{2}$$
$$\frac{8}{16}=\frac{8\div 4}{16\div 4}=\frac{2}{4}$$
$$\frac{8}{16}=\frac{8\div 2}{16\div 2}=\frac{4}{8}\neq\frac{3}{8}$$

Therefore, the correct answer is:

c) $\frac{3}{8}$ Blue, $\frac{3}{8}$ white? ✖

Question 8:

Draw grids of 16 squares and make patterns with

a) $\frac{2}{8}$ red, $\frac{1}{2}$ yellow, $\frac{1}{4}$ green

b) $\frac{3}{16}$ blue, $\frac{5}{16}$ red, $\frac{1}{2}$ green

Answer:

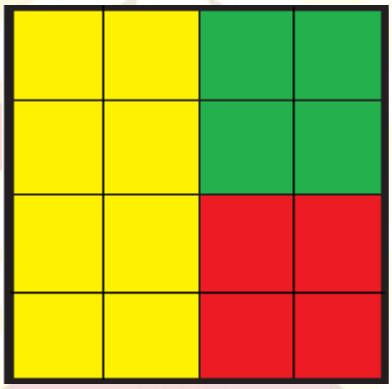
a) Find the number of squares to be coloured in red, yellow, and green.

Number of red-coloured squares $=\frac{2}{8}\times 16=4$

Number of yellow-coloured squares $= \frac{1}{2} \times 16 = 8$

Number of green-coloured squares $= \frac{1}{4} \times 16 = 4$

Therefore, draw a grid of 16 squares and colour 4 squares in the red, 8 squares in the yellow, and 4 squares in the green.



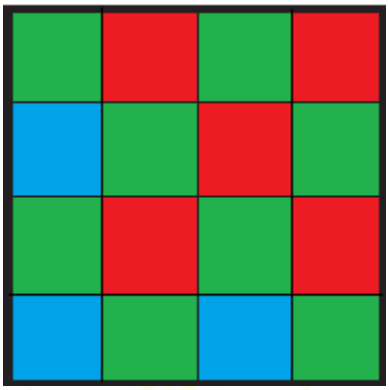
b) Find the number of squares to be coloured in blue, red, and green.

Number of blue-coloured squares $= \frac{3}{16} \times 16 = 3$

Number of red-coloured squares $= \frac{5}{16} \times 16 = 5$

Number of green-coloured squares $= \frac{1}{2} \times 16 = 8$

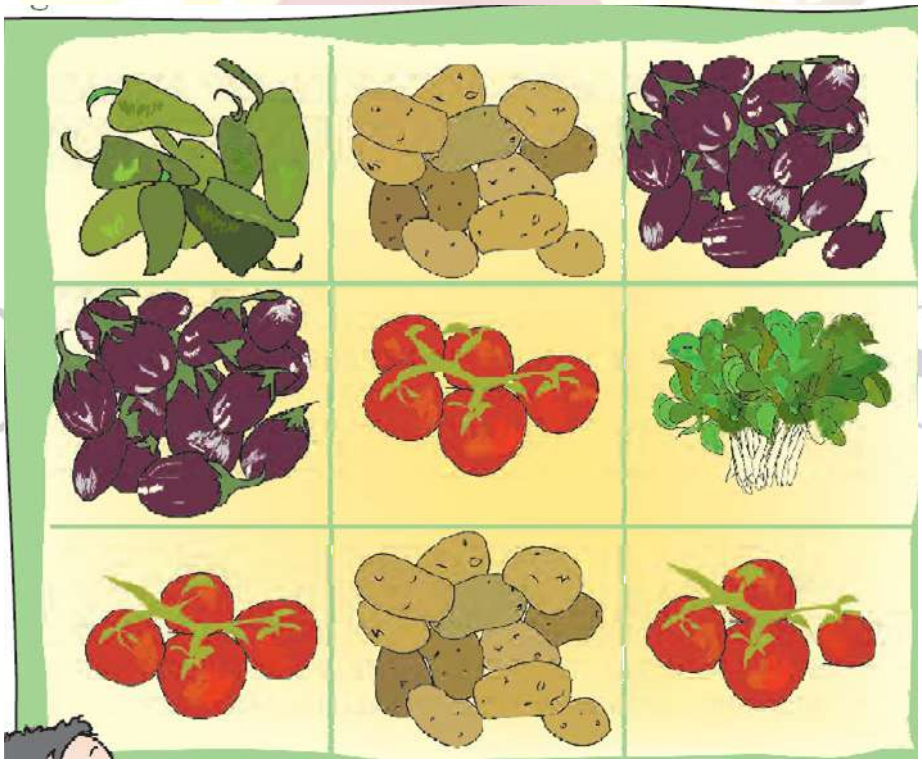
Therefore, draw a grid of 16 squares and colour 3 squares in the blue, 5 squares in the red, and 8 squares in the green.



Ramu's vegetable field

Question 9: (Page 58)

Ramu's vegetable field has 9 equal parts. What vegetables does he grow?



1) Which vegetable grows in the biggest part of his field? What part?

2) On what part of the field does he grow potatoes?

3) What part of the field is used to grow spinach? What part is used for brinjals?

4) Now you write some questions by looking at this picture.

Answer:

Observe the given picture. Ramu grows chillies, brinjals, tomatoes, spinach, and potatoes.

1) Observe the given picture. Out of 9 parts, tomatoes are in 3 parts. That is

$$\frac{3}{9} = \frac{1}{3}$$

Therefore, Ramu grows tomatoes in the biggest part of his field. That is one-third of the field.

2) The potatoes are in 2 out of 9 parts. That is $\frac{2}{9}$ of the field.

Therefore, he grows potatoes in the two-ninth part of the field.

3) Spinach is in 1 out of 9 parts. Therefore, he grows spinach in the one-ninth part of the field.

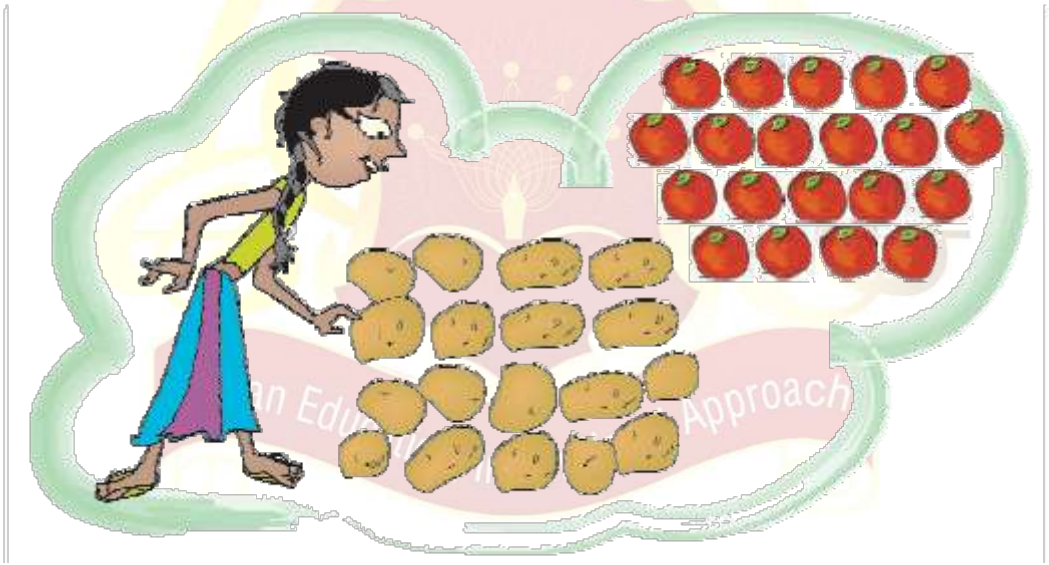
Brinjals are in 2 out of 9 parts. Therefore, he grows brinjals in the two-ninth part of the field.

4) Do it by yourself. Answers may vary. A sample question is:

Which vegetable grows in the smallest part of his field? What part?

Question 10:

Ramu wanted to give these vegetables to his friends. He gave Aboobacker one-fifth of these tomatoes and $\frac{1}{3}$ of the potatoes. Srija got $\frac{2}{5}$ of the tomatoes and $\frac{3}{6}$ of the potatoes. Nancy got the rest of these vegetables. Circle Aboobacker's share in blue. Circle Srija's share in yellow.



How many potatoes and tomatoes did Nancy get?

Answer:

There are 18 potatoes and 20 tomatoes in the given picture. See the given figure.

Step 1: Find the Aboobacker's share as:

One-fifth of the tomatoes $= \frac{1}{5} \times 20 = \frac{20}{5} = 4$ tomatoes.

$\frac{1}{3}$ of the potatoes $= \frac{1}{3} \times 18 = \frac{18}{3} = 6$ potatoes.

Step 2: Find Srija's share as:

$\frac{2}{5}$ of the tomatoes $= \frac{2}{5} \times 20 = \frac{2 \times 20}{5} = 8$ tomatoes.

$\frac{3}{6}$ of the potatoes $= \frac{3}{6} \times 18 = \frac{3 \times 18}{6} = 9$ potatoes.

Now, circle Aboobacker's share in blue, and Srija's share in yellow.

Since Nancy got the rest of the vegetables, count the vegetables that are not circled to find the share of Nacy.

Therefore, Nancy got 3 potatoes and 8 tomatoes.

Guess and Check

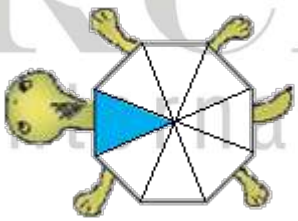
Question 11: (Page 61)

What part of each shape is coloured? First guess the answer, then check.

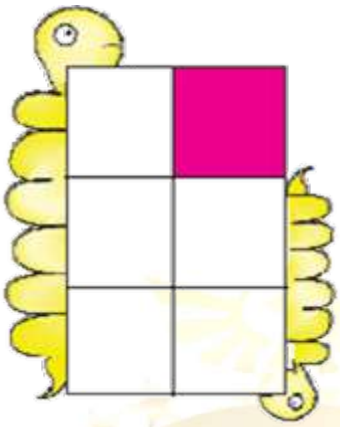
Answer:

Guess by yourself. The correct answer is.

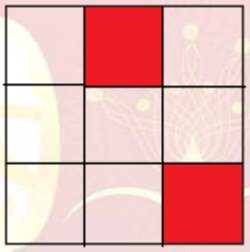
1) $\frac{1}{8}$ of the shape is coloured.



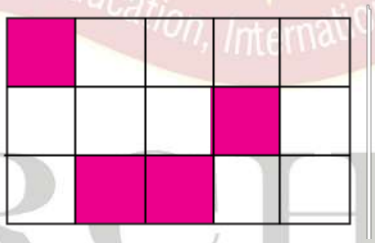
2) One-sixth of the shape is coloured.



3) $\frac{2}{9}$ of the shape is coloured.



4) $\frac{4}{15}$ of the shape is coloured.

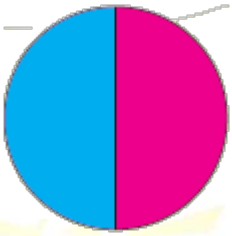


Coloured Parts

Question 12: (Page 62)

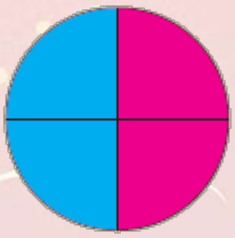
Complete these:

1)



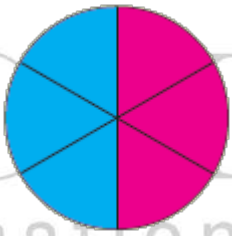
This circle is divided into two equal parts. Out of ..... equal parts one part is coloured blue.

2)



Here the circle is divided into..... equal parts. Out of ..... equal parts, ... parts are coloured blue.

3)



Here the circle is ……

4)

Here the circle is ……

Answer:

1) This circle is divided into two equal parts. Out of two equal parts one part is coloured blue.

2) Here the circle is divided into four equal parts. Out of four equal parts, two parts are coloured blue.

3) Here the circle is divided into six equal parts. Out of six equal parts, three parts are coloured blue.

4) Here the circle is divided into eight equal parts. Out of eight equal parts, four parts are coloured blue.

Therefore, $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$

Cutting the Halwa

Question 13: (Page 63)

Ramesh bought a piece of halwa for his children Ammu and Anu.

He divided it equally for them.

a) Each will get _____ part of halwa.

b) "This piece is too big. We can't eat it", they said. So he divided the pieces into half again. Now how many pieces will Ammu get?

What part of the halwa is it?

c) "Make it even smaller, Dad" they asked. So he again cut the halwa into smaller pieces. "Ok, thank you, Dad."

Now how many pieces will each get?

d) What part of the halwa is each piece now?

e) If Ramesh had cut the halwa into 6 equal parts how many pieces each have got? Look at your answers and write:

$\frac{1}{2}$ = ____ = ____ = ____ = ____ = ____

Answer:

a) Each will receive $\frac{1}{2}$ part of halwa.

b) Since the halwa is divided into four equal pieces, Ammu will get two pieces.

Since Amu will get 2 out of four pieces, it is $\frac{2}{4}$ of the halwa.

c) Since the halwa is divided into eight equal pieces, each one will get 4 pieces.

d) Since the halwa is divided into eight equal pieces, each piece is $\frac{1}{8}$ of the halwa.

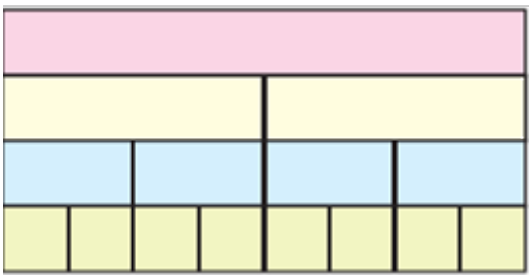
e) If the halwa is divided into six equal pieces, then each one will get three pieces.

$$\frac{1}{2}=\frac{2}{4}=\frac{4}{8}=\frac{3}{6}=\frac{8}{16}=\frac{16}{32}$$

Parts of the Strip

Question 14: (Page 64)

a) Look at the picture. Write what part of the strip is each green piece. Write the part for a piece of each colour.



b) How many one-fourths will make a half?

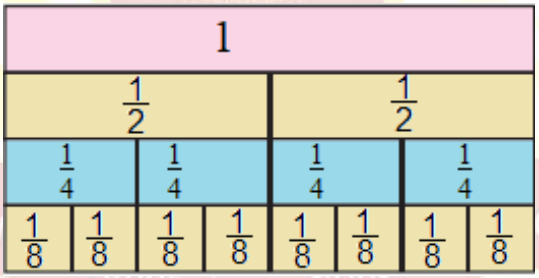
c) How many $\frac{1}{8}$ will make $\frac{1}{4}$?

d) How many $\frac{1}{8}$ are in $\frac{1}{2}$?

Answer:

a) The green strip is divided into 4 equal parts. Therefore, each part is $\frac{1}{4}$ of the whole green strip.

Part of a piece of each colour is shown below.



b) There are two one-fourths in one half.

c) There are two $\frac{1}{8}$ in $\frac{1}{4}$.

d) There are four $\frac{1}{8}$ in $\frac{1}{2}$.

Patterns

Question 15:

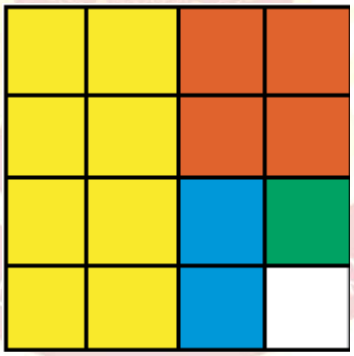
Look at the square.

a) What part is coloured blue?

b) What part is green?

Answer:

a) We can divide the given square in 16 equal squares as shown below.



Two out of 16 squares are coloured blue.

Therefore,

$\frac{2}{16}$ or $\frac{1}{8}$ part is coloured blue.

b) One out of the sixteen squares is coloured green. Therefore,

$\frac{1}{16}$ part is coloured green.

From a Part to the Whole

Question 16: (Page 65)

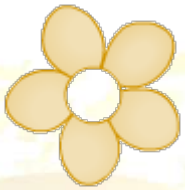
1) This show $\frac{1}{5}$ petals of a flower. Complete the flower by drawing the other petals.

2)The picture shows one-third of the blades of a fan. Complete the picture by drawing the other blades.

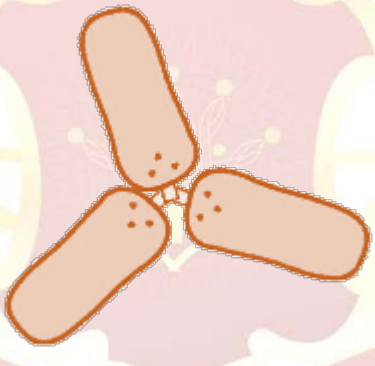
3) Half of the blades of another fan are shown here. Complete the picture by drawing the other half. How many blades have you drawn?

Answer:

1) The complete flower is shown below.



2) The complete fan is shown below.



3) Two blades a drawn that are half of the total blades. So, we need to draw two more blades. The complete fan is shown below.

Rupees and Paise

Question 17:

a) How many 50-paise coins will make one rupee?

b) Is 50 paise half of one rupee?

c) How many 25-paise coins will make one rupee?

d) 25 paise is _____ part of one rupee.

e) 20 paise is _____ part of one rupee.

f) How many 10 paise will make one rupee?

Answer:

a) Two 50-paise coins will make one rupee.

b) Since there are two 50-paise coins in one rupee, 50 paise is half of one rupee.

c) There are four 25-paise coins in one rupee.

d) Since there are four 25-paise coins in one rupee, 25 paise is one fourth part of one rupee.

e) There are five 20-paise coins in one rupee. Therefore, 20 paise is one-fifth of one rupee.

f) There are ten 10-paise coins in one rupee.

Question 18: (Page 67)

Arun's Time Table

Sleeping: One third of a day

a) Use different colours to show:

Playing: One eighth of a day

Studying: $\frac{1}{4}$ of a day

b) How many hours does Arun take for:

Sleeping? ____ hours.

Studying? ____ hours.

Playing? ____ hours.

c) What part of the day does he use for other activities?

Answer:

a) There are 24 hours in a day. Therefore,

One-eight of a day $= \frac{1}{8} \times 24 = \frac{24}{8} = 3$ hours.

$\frac{1}{4}$ of a day $= \frac{1}{4} \times 24 = \frac{24}{4} = 6$ hours.

There are 24 hours in a day, and the strip for Arun's time table is divided into 24 equal parts. Therefore, each part represents one hour.

Using different colours, colour 3 parts for playing, and 6 parts for studying.

b) From part a), he takes:

8 hours for sleeping

6 hours for studying

hours of playing.

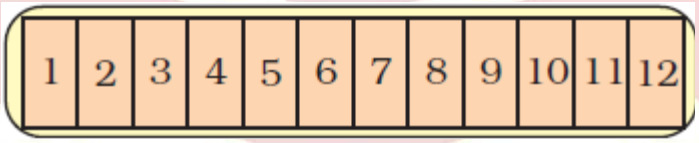
c) The uncoloured boxes of the strip in part a) shows the time for other activities.

There are 7 uncoloured boxes. Therefore, he uses $\frac{7}{24}$ of a day for other activities.

School Magazine

Question 19: (Page 68)

A school has decided to bring out a magazine every quarter of the year. How many magazines will they have in a year? If they want to print it at the end of each quarter of a year, which are the months for printing? Mark the number for those months.

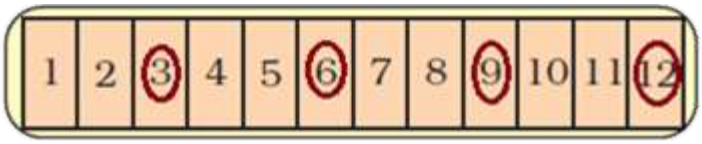


Answer:

A quarter is one-fourth of the whole. Since there are 12 months in one year, a quarter of one year is

$\frac{1}{4} \times 12 = 3$ months.

Therefore, they will have four magazines in one year. The number for those months are marked.



Sleeping Beauty

Question 20:

Have you heard of Kumbhakarna, the brother of Ravana? He is famous for sleeping for half a year.

a) Most people sleep about 8 hours a day. Then what part of a day is it?

b) So what part of a year do they sleep? A person 60 years old must have slept _____ years!!!

Answer:

a) There are 24 hours in a day. Therefore, 8 hours is

$\frac{8}{24} = \frac{1}{3}$ of a day.

Hence, most people sleep about one-third of a day.

b) Since most people sleep about one-third of a day, they also sleep one-third of a year.

A 60 years old person must have slept for

$\frac{1}{3} \times 60 = 1 \times 20 = 20$ years.

Keerti's Shopping List

Question 21: (Page 69)

Look at the yellow price list.

a) How much does 2 kg of tomato cost?

b) How much does $\frac{1}{2}$ kg of tomato cost?

c) Kiran wants $2\frac{1}{2}$ kg of tomato. How much will it cost?

d) How much does $3\frac{1}{2}$ kg potato cost?

e) What is the price of $1\frac{1}{4}$ kg of carrot?

f) He bought a gourd of weight $4\frac{3}{4}$ kg and it costs?

g) Look at the shopping list in Keerti's hand. How much will she have to pay to buy all of these?

h) Make a bill of your own for vegetables you want to buy. Find the total money you will have to pay.

Item	Price in Rs (per kg)	Amount
	Total	

Answer:

a) Price of 1 kg tomato is Rs12. Therefore,

price of 2 kg tomato = 12 × 2 = Rs 24.

b) Price of 1 kg of tomato is Rs 12. Therefore,

price of $\frac{1}{2}$ kg tomato = $\frac{1}{2} \times 12 =$ Rs 6.

c) First convert $2\frac{1}{2}$ in fraction as:

$$2\frac{1}{2} = \frac{2 \times 2 + 1}{2} = \frac{5}{2}$$

The price of 1 kg tomato is Rs 12, Therefore,

price of $\frac{5}{2}$ kg tomato = $\frac{5}{2} \times 12 =$ Rs 30.

Hence, the price of $2\frac{1}{2}$ kg tomato is Rs 30.

d) First convert $3\frac{1}{2}$ in fraction as:

$$3\frac{1}{2} = \frac{3 \times 2 + 1}{2} = \frac{7}{2}$$

The price of 1 kg potato is Rs 10. Therefore,

price of $\frac{7}{2}$ kg potato = $\frac{7}{2} \times 10 =$ Rs 35.

Hence, the price of $3\frac{1}{2}$ kg potato is Rs 35.

e) First convert $1\frac{1}{4}$ in fraction as:

$$1\frac{1}{4} = \frac{1\times 4+1}{4} = \frac{5}{4}$$

The price of 1 kg carrot is Rs 18. Therefore,

price of $\frac{5}{4}$ kg carrot = $\frac{5}{4}\times 18 = 22\frac{1}{2}$ = Rs 22.50

Hence, the price of $1\frac{1}{4}$ kg carrot is 22 rupees and 50 paise.

f) First convert $4\frac{3}{4}$ in fraction as:

$$4\frac{3}{4} = \frac{4\times 4+3}{4} = \frac{19}{4}$$

The price of 1 kg gourd is Rs 8. Therefore,

price of $\frac{19}{4}$ kg gourd = $\frac{19}{4}\times 8 =$ Rs 38.

g)

Item	**Price per kg (in rupees)**	**Total price**
Potato $2\frac{1}{4}$ kg	10	Rs 22.50
Carrot $3\frac{3}{4}$ kg	18	Rs 67.50
Gourd $1\frac{1}{2}$ kg	8	Rs 12

Total	**Rs 102**

h) Do it by yourself.

Question 22: (Page 70)

Raheem has to travel $1\frac{1}{4}$ km to reach school. What distance does he travel to go to school and come back home?

Answer:

First convert $1\frac{1}{4}$ in fraction as:

$$1\frac{1}{4}=\frac{1\times 4+1}{4}=\frac{5}{4}$$

The distance from his home to school is $\frac{5}{4}$ km. Therefore, the total distance covered in going to school and coming back to the home is

$$2\times\frac{5}{4}=\frac{10}{4}=2\frac{1}{2}\text{km}$$

Question 23:

Latha bought a pencil and a pen for seven and a half rupees. She gave Rs 10/–. The shopkeeper gave back the money in half and quarter rupees. What are the coins she got?

Answer:

Latha spent Rs $\frac{15}{2}$ on a pencil and a pen.

The total amount returned the shopkeeper is

$10 - 7\frac{1}{2}$ = Rupee two and half.

Following are the possible combinations of half and quarters for rupee two and half.

One half-rupee coin and eight quarter-rupee coins.

Two half-rupee coins and six quarter-rupee coins.

Three half-rupee coins and four quarter-rupee coins.

Four half-rupee coins and two quarter-rupee coins.

Question 24: (Page 70)

At the railway station

a) What time is the train expected to come today?

b) Nazia gets off at a station after $2\frac{1}{2}$ hours from this station. What time will she get off?

c) Shaji will take 5 hours to reach Ernakulam by this train. At what time will he reach there?

Answer:

a) The correct time for the train is quarter to seven, or $6\frac{3}{4}$ hours, but the train is late by half an hour. Therefore, the expected arrival time for the train is

$$6+\frac{3}{4}+\frac{1}{2}=\frac{24}{4}+\frac{3}{2}+\frac{2}{4}$$
$$=\frac{29}{4}=7\frac{1}{4}$$

Hence, the expected arrival time for the train is quarter past seven.

b) The expected arrival time of the train is $7\frac{1}{4}$ hours and Nazia gets off after $2\frac{1}{2}$ hours. Therefore, Nazia will get off at

$7\frac{1}{4}+2\frac{1}{2}=7\frac{1}{4}+2\frac{2}{4}=9\frac{3}{4}$ hours.

Or quarter to nine.

c) Shaji will reach Ernakulam by this train after 5 hours.

Expected time of the arrival of the train is $7\frac{1}{4}$ hours.

Expected time at which Shazi will reach Ernakulam is:

$7\frac{1}{4}+5=12\frac{1}{4}$ hours.