CHAPTER – 11

Algebra

EXERCISE – 11.4

Q. 1 A

Answer the following:

Take Sarita's present age to be y years
(i) What will be her age 5 years from now?
(ii) What was her age 3 years back?
(iii) Sarita's grandfather is 6 times her age. What is the age of grandfather?
(iv) Grandmother is 2 years younger than grandfather. What is grandmother's age?
(v) Sarita's father's age is 5 years more than 3 times Sarita's age. What is her father's age?

Answer:

The answers of the parts are answered below:

(i) We know that,

Sarita's present age is y
Hence,

Sarita 's age five years from now will be = Sarita's present age + 5

= y + 5

(ii) We know that,

Sarita’s present age is y

Hence,

Sarita’s age three years ago will be = Sarita’s present age – 3

= y – 3

(iii) We know that,

Sarita’s present age is y

Hence,

Sarita’s grandfather’s age will be = Sarita’s present age × 6

= 6y

(iv) We know that,

Grandfather’s age is 6y

Hence,

Grandmother’s age will be = Grandfather’s age – 2

= 6y – 2

(v) We know that,

Sarita’s present age is y

Hence,

Sarita's father's age = 5 + 3 × Sarita's present age

= 5 + (3 × y)

= 5 + 3y

Q. 1 B

Answer the following:

The length of a rectangular hall is 4 metres less than 3 times the breadth of the hall. What is the length, if the breadth is *b* metres?

Answer:

According to the question,

We know that,

The breadth of the rectangular hall is b metres

Therefore,

Length of the rectangular hall = 3 × breadth – 4

l = (3 × b) – 4

l = 3b – 4

Hence,

The length will be (3b – 4) metres.

Q. 1 C

Answer the following:

A rectangular box has height *h* cm. Its length is 5 times the height and breadth is 10 cm less than the length. Express the length and the breadth of the box in terms of the height.

Answer:

Here,

It is given in the question that,

The height of the rectangular box = h

Now,

We have to express the length and breadth in terms of height

Thus,

Let the length of the rectangular box be l

And,

The breadth of the rectangular box be b

Hence,

Length of the box = 5 × height

l = 5h cm

Breadth of the box = 5 × height – 10

b = (5h – 10) cm

Q. 1 D

Answer the following:
Meena, Beena, and Leena are climbing the steps to the hilltop. Meena is at step s, Beena is 8 steps ahead and Leena 7 steps behind. Where are Beena and Meena? The total number of steps to the hill yop is 10 less than 4 times what Meena has reached. Express the total number of steps using s.

Answer:

Here,

According to the question,

We know that,

Meena is at step s

Now,

Step at which Beena is = (Step at which Meena is) + 8

= s + 8

And,

Step at which Leena is = (Step at which Meena is) – 7

= s – 7

Hence,

Total steps = 4 × (Step at which Meena is) – 10

= 4 × s – 10

= 4s – 10

Q. 1 E

Answer the following:

A bus travels at *v* km per hour. It is going from Daspur to Beespur. After the bus has travelled 5 hours, Beespur is still 20 km away. What is the distance from Daspur to Beespur? Express it using *v*.

Answer:

Here,

According to the question,

We know that,

Speed = v km/hr

Now,

We have to calculate the distance between Daspur to Beespur

So,

At first we need the distance travelled in 5 hours

Thus,

Distance traveled in five hours = 5 × v

= 5v

Hence,

The total distance between Daspur and Beespur = (dist. Travelled in 5 hours) + 20

= 5v + 20

Q. 2

Change the following statements using expressions into statements in ordinary language.

(For example, given Salim scores *r* runs in a cricket match, Nalin scores (*r*+15) runs. In ordinary language – Nalin scores 15 runs more than Salim.)
(a) A notebook costs Rs*p*. A book costs Rs 3*p*.
(b) Tony puts q marbles on the table. He has 8q marbles in his box.
(c) Our class has n students. The school has 20n students.
(d) Jaggu is z years old. His uncle is 4z years old and his aunt is (4z-3) years old.
(e) In an arrangement of dots there are r rows. Each row contains 5 dots.

Answer:

(a) Here,

In the given question,

We know that,

Cost of a notebook = Rs p

And,

Cost of book = Rs 3p

Hence,

We can clearly observe that,

A book costs three times the cost of a notebook.

(b) Here,

In the given question,

We know that,

Number of marbles Tony puts on the table = q

And,

Number of marbles Tony has in his box = 8q

Hence,

We can clearly observe that,

Tony's box contains 8times the number of marbles on the table.

(c) Here,

In the given question,

We know that,

Number of students in our class = n

And,

Total number of students in the school = 20n

Hence,

We can clearly observe that,

The total number of students in the school is 20 times the student in our class.

(d) Here,

In the given question,

We know that,

Age of Jaggu = z years

And,

Age of his uncle = 4z

And,

Age of his aunt = 4z - 3

Hence,

We can clearly observe that,

Jaggu's uncle is 4 times older than Jaggu.

And,

Jaggu's aunt is 3 years younger than his uncle.

(e) Here,

In the given question,

We know that,

Number of rows = r

And,

Number of dots in each row = 5

Hence,

We can clearly observe that,

The total number of dots is 5 times the number of rows.

Q. 3 A

Given Munnu's age to be x years, can you guess what (x – 2) may show?

Can you guess what $x + 4$ may show? What ($3x+7$) may show?

Answer:

Here,

According to the question,

We can conclude that,

(x – 2) represents that the person, whose age is (x – 2) years, is two years younger to Munnu.

And,

(x + 4) represents that the person, whose age is (x + 4) years, is four years elder to Munnu.

And,

(3x + 7) represents that the person, whose age is (3x + 7) years,
is elder to Munnu and his age is 7 years more than thrice the age of Munnu.

Q. 3 B

Given Sara's age today to be *y* years. Think of her age in the future or in the past. What will the following expressions indicate?

Y + 7, y – 3, y + $4\frac{1}{2}$, y – $2\frac{1}{2}$

Answer:

At first,

In future,

Sara's age will be (y + n), after n years from now.

Now,

In past,

'n' years ago, Sara's age was (y – n).

Now,

According to the question,

We can conclude that,

(y + 7) represents that the person, whose age is (y + 7) years, is 7 years elder to Sara.

And,

(y -3) represents that the person, whose age is (y – 3) years, is 3 years younger than Sara.

And,

$(y + 4\frac{1}{2})$ represents that the person, whose age is $(y + 4\frac{1}{2})$ years, is $4\frac{1}{2}$ years elder to Sara.

And,

$(y - 2\frac{1}{2})$ represents that the person, whose age is $(y - 2\frac{1}{2})$ years, is $2\frac{1}{2}$ years younger than Sara.

Q. 3 C

Given n students in the class like football, what may $2n$ show? What may show $\frac{n}{2}$?

Answer:

Here,

According to the question,

We can conclude that,

2n may represent the number of person who either likes football or some other game such as cricket

Whereas,

$\frac{n}{2}$ represents the number of students who like cricket, out of the total number of students who like either football or cricket.