# Exercise 11.3 page no: 233

## Make up as many expressions with numbers (no variables) as you can from three numbers 5, 7 and 8. Every number should be used not more than once. Use only addition, subtraction and multiplication.

**Solutions:**

Some of the expressions formed by 5, 7 and 8 are as follows 5 × (8 – 7)

5 × (8 + 7)

(8 + 5) × 7

(8 – 5) × 7

(7 + 5) × 8

(7 – 5) × 8

## Which out of the following are expressions with numbers only?

**(a) y + 3**

**(b) (7 × 20) – 8z**

**(c) 5 (21 – 7) + 7 × 2**

1. **5**
2. **3x**
3. **5 – 5n**

**(g) (7 × 20) – (5 × 10) – 45 + p**

**Solutions:**

(c) and (d) are the expressions with numbers only.

## Identify the operations (addition, subtraction, division, multiplication) in forming the following expressions and tell how the expressions have been formed.

**(a) z + 1, z – 1, y + 17, y – 17**

**(b) 17y, y / 17, 5z (c) 2y + 17, 2y – 17**

**(d) 7m, -7m + 3, -7m – 3**

**Solutions:**

1. z + 1 = 1 is added to z = Addition

z – 1 = 1 is subtracted from z = Subtraction y + 17 = 17 is added to y = Addition

y – 17 = 17 is subtracted from y = Subtraction

1. 17y = y is multiplied by 17 = Multiplication y / 17 = y is divided by 17 = Division

5z = z is multiplied by 5 = Multiplication

1. 2y + 17 = y is multiplied by 2 and 17 is added to the result = Multiplication and addition 2y – 17 = y is multiplied by 2 and 17 is subtracted from the result = Multiplication and

subtraction

1. 7m = m is multiplied by 7 = multiplication

-7m + 3 = m is multiplied by -7 and 3 is added to the result = Multiplication and addition

-7m – 3 = m is multiplied by -7 and 3 is subtracted from the result = Multiplication and subtraction

## Give expressions for the following cases.

1. **7 added to p**
2. **7 subtracted from p**
3. **p multiplied by 7**
4. **p divided by 7**
5. **7 subtracted from –m**
6. **–p multiplied by 5**
7. **–p divided by 5**
8. **p multiplied by -5 Solutions:**
9. 7 is added to p is (p + 7)
10. 7 subtracted from p is (p – 7)
11. p multiplied by 7 is (7p)
12. p divided by 7 is (p / 7)
13. 7 subtracted from –m is (-m – 7)
14. –p multiplied by 5 is (-5p)
15. –p divided by 5 is (–p / 5)
16. p multiplied by -5 is (-5p)

## Give expressions in the following cases.

1. **11 added to 2m**
2. **11 subtracted from 2m**
3. **5 times y to which 3 is added**
4. **5 times y from which 3 is subtracted**
5. **y is multiplied by -8**
6. **y is multiplied by -8 and then 5 is added to the result**
7. **y is multiplied by 5 and the result is subtracted from 16**
8. **y is multiplied by -5 and the result is added to 16. Solutions:**
9. 11 added to 2m is (2m + 11)
10. 11 subtracted from 2m is (2m – 11)
11. 5 times y to which 3 is added is (5y + 3)
12. 5 times y from which 3 is subtracted is (5y – 3)
13. y is multiplied by -8 is (-8y)
14. y is multiplied by -8 and then 5 is added to the result is (-8y + 5)
15. y is multiplied by 5 and the result is subtracted from 16 is (16 – 5y)

(h) y is multiplied by -5 and the result is added to 16 is (-5y + 16)

## (a) Form expressions using t and 4. Use not more than one number operation. Every expression must have t in it.

**(b) Form expressions using y, 2 and 7. Every expression must have y in it. Use only two number operations. These should be different.**

**Solutions:**

1. (t + 4), (t – 4), 4t, (t / 4), (4 / t), (4 – t), (4 + t) are the expressions using t and 4 (b) 2y + 7, 2y – 7, 7y + 2,…are the expression using y, 2 and 7

# Exercise 11.4 page no: 235

## Answer the following:

1. **Take Sarita’s present age to be y years**
   1. **What will be her age 5 years from now?**
   2. **What was her age 3 years back?**
   3. **Sarita’s grandfather is 6 times her age. What is the age of her grandfather?**
   4. **Grandmother is two year younger than grandfather. What is grandmother’s age?**
   5. **Sarita’s father’s age is 5 years more than 3 times Sarita’s age. What is her father’s age?**
2. **The length of a rectangular hall is 4 meters less than three times the breadth of the hall. What is the length, if the breadth is b meters?**
3. **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.**
4. **Meena, Beena and Reena are climbing the steps to the hill top. 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 top is 10 less than 4 times what Meena has reached. Express the total number of steps using s.**
5. **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.**



**Solutions:**

1. (i) Sarita’s age aftyer 5 years from now = Sarita’s present age + 5

= (y + 5) years

* 1. Sarita’s age 3 years back = Sarita’s present age – 3

= (y – 3) years

* 1. Grandfather’s age = 6 × Sarita’s present age

= 6y years

* 1. Grandmother’s age = granfather’s present age – 2

= (6y -2) years

* 1. Father’s age = 5 + 3 × Sarita’s present age

= (5 + 3y) years

1. Length = 3 × Breadth – 4 l = (3b – 4) metres
2. Length = 5 × Breadth l = 5h cm

Breadth = 5 × length – 10 b = (5h – 10) cm

1. The step at which Beena is = (step at which Meena is) + 8

= (s + 8)

The step at which Leena is = (step at which Meena is) – 7

= (s – 7)

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

= (4s – 10)

1. Speed = v km / hr

Distance travelled in 5 hours = 5 × v

= 5v km

Total distance travelled between Daspur and Beespur = (5v + 20) km

## 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.)**

1. **A notebook costs ₹ p. A book costs ₹ 3p**
2. **Tony put q marbles on the table. He has 8 q marbles in his box.**
3. **Our class has n students. The school has 20 n students.**
4. **Jaggu is z years old. His uncle is 4z years old and his aunt is (4z – 3) years old.**
5. **In an arrangement of dots there are r rows. Each row contains 5 dots Solutions:**
6. A book costs 3 times the costs of a notebook.
7. Tony’s box contains 8 times the number of marbles on the table
8. Total number of students in the school is 20 times that of our class
9. Jaggu’s uncle is 4 times older than Jaggu and Jaggu’s aunt is 3 years younger than his uncle
10. The total number of dots is 5 times the number of rows

## (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?

* 1. **Given Sara’s age today to be y years. Think of her age in the future or in the past. What will the following expression indicate? Y + 7, y – 3, , **
  2. **Given n students in the class like football, what may 2n shows? What may n / 2 show? Solutions:**

1. (x – 2) represents the person whose age is (x – 2) years and he is 2 years younger to Munnu

(x + 4) represents the person whose age is (x + 4) years and he is 4 years elder than Munnu

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

1. In Future

After n years since now, Sara’s age will be (y + n) years

In past

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

(y + 7) represents the person whose age is (y + 7) years and is 7 years elder to Sara

(y – 3) represents the person whose age is (y – 3) years and is 3 years younger to Sara  represents the person whose age is  years and is  years elder to Sara

represents the person whose age is years and is years younger to

Sara

1. 2n shows the number of students who like either football or some other game like tennis whereas n / 2 shows the number of students who like tennis out of the total number of students who like football.

**Exercise 11.5 page no: 240**

## State which of the following are equations (with a variable). Give reason for your answer. Identify the variable from the equations with a variable.

**(a) 17 = x + 17**

**(b) (t – 7) > 5**

**(c) 4 / 2 = 2**

**(d) (7 × 3) – 19 = 8**

**(e) 5 × 4 – 8 = 2x**

**(f) x – 2 = 0**

**(g) 2m < 30 (h) 2n + 1 = 11**

**(i) 7 = (11 × 5) – (12 × 4)**

**(j) 7 = (11 × 2) + p**

**(k) 20 = 5y (l) 3q/ 2 < 5**

**(m) z + 12 > 24**

**(n) 20 – (10 – 5) = 3 × 5**

**(o) 7 – x = 5 Solutions:**

1. An equation with variable x
2. An inequality equation
3. No, it’s a numerical equation
4. No, it’s a numerical equation
5. An equation with variable x
6. An equation with variable x
7. An inequality equation
8. An equation with variable n
9. No, it’s a numerical equation
10. An equation with variable p
11. An equation with variable y
12. An inequality equation
13. An inequality equation
14. No, it’s a numerical equation
15. An equation with variable x

## Complete the entries in the third column of the table.

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Equation** | **Value of variable** | **Equation satisfied**  **Yes / No** |
| **(a)** | **10y = 80** | **y = 10** |  |
| **(b)** | **10y = 80** | **y = 8** |  |
| **(c)** | **10y = 80** | **y = 5** |  |
| **(d)** | **4l = 20** | **l = 20** |  |
| **(e)** | **4l = 20** | **l = 80** |  |
| **(f)** | **4l = 20** | **l = 5** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **(g)** | **b + 5 = 9** | **b = 5** |  |
| **(h)** | **b + 5 = 9** | **b = 9** |  |
| **(i)** | **b + 5 = 9** | **b = 4** |  |
| **(j)** | **h – 8 = 5** | **h = 13** |  |
| **(k)** | **h – 8 = 5** | **h = 8** |  |
| **(l)** | **h – 8 = 5** | **h = 0** |  |
| **(m)** | **p + 3 = 1** | **p = 3** |  |
| **(n)** | **p + 3 = 1** | **p = 1** |  |
| **(o)** | **p + 3 = 1** | **p = 0** |  |
| **(p)** | **p + 3 = 1** | **p = -1** |  |
| **(q)** | **p + 3 = 1** | **p = -2** |  |

**Solutions:**

**(a)** 10y = 80

y = 10 is not a solution for this equation because if y = 10, 10y = 10 × 10

= 100 and not 80 (b) 10y = 80

y = 8 is a solution for this equation because if y = 8, 10y = 10 × 8

= 80

∴ Equation satisfied (c) 10y = 80

y = 5 is not a solution for this equation because if y = 5, 10y = 10 × 5

= 50 and not 80

(d) 4l = 20

l = 20 is not a solution for this equation because if l = 20, 4l = 4 × 20

= 80 and not 20

(e) 4l = 20

l = 80 is not a solution for this equation because if l = 80, 4l = 4 × 80

= 320 and 20

(f) 4l = 20

l = 5 is a solution for this eqaution because if l = 5, 4l = 4 × 5

= 20

∴ Equation satisfied

(g) b + 5 = 9

b = 5 is not a solution for this equation because if b = 5, b + 5 = 5 + 5

= 10 and not 9

(h) b + 5 = 9

b = 9 is not a solution for this equation because if b = 9, b + 5 = 9 + 5

= 14 and not 9

(i) b + 5 = 9

b = 4 is a solution for this equation because if b = 4, b + 5 = 4 + 5

= 9

∴ Equation satisfied

(j) h – 8 = 5

h = 13 is a solution for this equation because if h = 13, h – 8 = 13 – 8

= 5

∴ Equation satisfied

(k) h – 8 = 5

h = 8 is not a solution for this equation because if h = 8, h – 8 = 8 – 8

= 0 and not 5

(l) h – 8 = 5

h = 0 is not a solution for this equation because if h = 0, h – 8 = 0 – 8

= - 8 and not 5

(m) p + 3 = 1

p = 3 is not a solution for this equation because if p = 3, p + 3 = 3 + 3

= 6 and not 1

(n) p + 3 = 1

p = 1 is not a solution for this equation because if p = 1, p + 3 = 1 + 3

= 4 and not 1

(o) p + 3 = 1

p = 0 is not a solution for this equation because if p = 0, p + 3 = 0 + 3

= 3 and not 1

(p) p + 3 = 1

p = -1 is not a solution for this equation because if p = - 1, p + 3 = -1 + 3

= 2 and not 1

(q) p + 3 = 1

p = -2 is a solution for this equation because if p = -2, p + 3 = -2 + 3

= 1

∴ Equation satisfied

## Pick out the solution from the values given in the bracket next to each equation. Show that the other values do not satisfy the equation.

|  |  |
| --- | --- |
| **(a) 5m = 60** | **(10, 5, 12, 15)** |
| **(b) n + 12** | **(12, 8, 20, 0)** |
| **(c) p – 5 = 5** | **(0, 10, 5 – 5)** |
| **(d) q / 2 = 7** | **(7, 2, 10, 14)** |
| **(e) r – 4 = 0** | **(4, -4, 8, 0)** |
| **(f) x + 4 = 2** | **(-2, 0, 2, 4)** |
| **Solutions:** |  |
| **(a)** 5m = 60 |  |

m = 12 is a solution for this equation because for m = 12, 5m = 5 × 12

= 60

∴ Equation satisfied

m = 10 is not a solution for this equation because for m = 10, 5m = 5 × 10

= 50 and not 60

m = 5 is not a solution for this equation because for m = 5, 5m = 5 × 5

= 25 and not 60

m = 15 is not a solution for this equation because for m = 15, 5m = 5 × 15

= 75 and not 60

(b) n + 12 = 20

n = 8 is a solution for this equation because for n = 8, n + 12 = 8 + 12

= 20

∴ Equation satisfied

n = 12 is not a solution for this equation because for n = 12, n + 12 = 12 + 12

= 24 and not 20

n = 20 is not a solution for this equation because for n = 20, n + 12 = 20 + 12

= 32 and not 20

n = 0 is not a solution for this equation because for n = 0, n + 12 = 0 + 12

= 12 and not 20

(c) p – 5 = 5

p = 10 is a solution for this equation because for p = 10, p – 5 = 10 – 5

= 5

∴ Equation satisfied

p = 0 is not a solution for this equation because for p = 0, p – 5 = 0 – 5

= -5 and not 5

p = 5 is not a solution for this equation because for p = 5, p – 5 = 5 – 5

= 0 and not 5

p = -5 is not a solution for this equation because for p = -5, p – 5 = -5 – 5

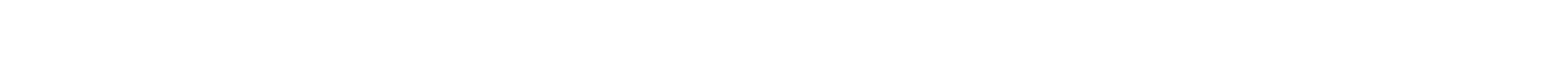
= - 10 and not 5

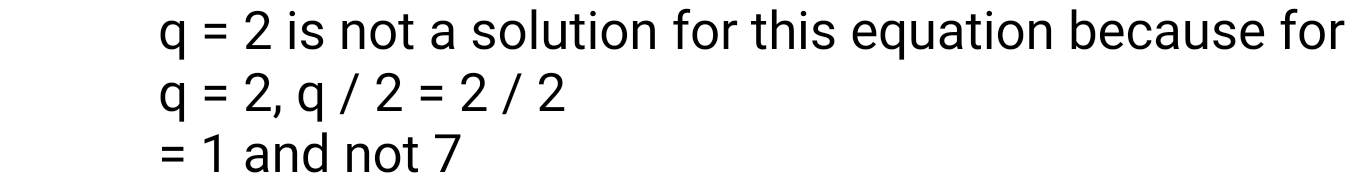
(d) q / 2 = 7

q = 14 is a solution for this equation because for q = 14, q / 2 = 14 / 2

= 7

∴ Equation satisfied

q = 7 is not a solution for this equation because for q = 7, q / 2 = 7 / 2 and not 7



q = 10 is not a solution for this equation because for q = 10, q / 2 = 10 / 2

= 5 and not 7

(e) r – 4 = 0

r = 4 is a solution for this equation because for r = 4, r – 4 = 4 – 4

= 0

∴ Equation satisfied

r = -4 is not a solution for this equation because for r = - 4, r – 4 = - 4 – 4

= -8 and not 0

r = 8 is not a solution for this equation because for r = 8, r – 4 = 8 – 4

= 4 and not 0

r = 0 is not a solution for this equation because for r = 0, r – 4 = 0 – 4

= - 4 and not 0

(f) x + 4 = 2

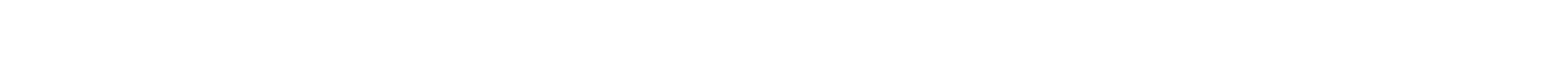
x = -2 is a solution for this equation because for x = -2, x + 4 = - 2 + 4

= 2

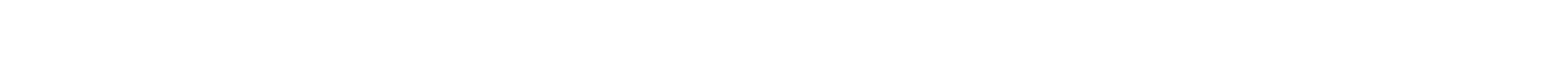
∴ Equation satisfied

x = 0 is not solution for this equation because for x = 0, x + 4 = 0 + 4

= 4 and not 2

x = 2 is not a solution for this equation because for x = 2, x + 4 = 2 + 4

= 6 and not 2

x = 4 is not a solution for this equation because for x = 4, x + 4 = 4 + 4

= 8 and not 2

## (a)Complete the table and by inspection of the table find the solution to the equation m + 10 = 16.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **m** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **--** | **--** | **--** |
| **m + 10** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** |

1. **Complete the table and by inspection of the table, find the solution to the equation 5t = 35**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **t** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **--** | **--** | **--** | **--** | **--** |
| **5t** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** |

1. **Complete the table and find the solution of the equation z / 3 = 4 using the table.**

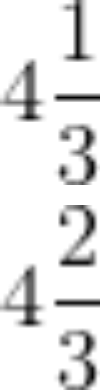
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **z** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **--** | **--** | **--** | **--** |
| **z / 3** | **3** | | **--** | | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** |

1. **Complete the table and find the solution to the equation m – 7 = 3.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **m** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **--** | **--** |
| **m - 7** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** |

**Solutions:**

1. For m + 10, the table is represented as below



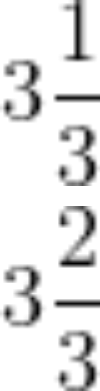
|  |  |
| --- | --- |
| m | m + 10 |
| 1 | 1 + 10 = 11 |
| 2 | 2 + 10 = 12 |
| 3 | 3 + 10 = 13 |
| 4 | 4 + 10 = 14 |
| 5 | 5 + 10 = 15 |
| 6 | 6 + 10 = 16 |
| 7 | 7 + 10 = 17 |
| 8 | 8 + 10 = 18 |
| 9 | 9 + 10 = 19 |
| 10 | 10 = 10 = 20 |

Now, by inspection we may conclude that m = 6 is the solution of the above equation since, for m = 6, m + 10 = 6 + 10 = 16

1. For 5t, the table is represented as below

|  |  |
| --- | --- |
| t | 5t |
| 3 | 5 × 3 = 15 |
| 4 | 5 × 4 = 20 |
| 5 | 5 × 5 = 25 |
| 6 | 5 × 6 = 30 |
| 7 | 5 × 7 = 35 |
| 8 | 5 × 8 = 40 |
| 9 | 5 × 9 = 45 |
| 10 | 5 × 10 = 50 |
| 11 | 5 × 11 = 55 |

Now, by inspection we may conclude that t = 7 is the solution of the above equation since, for t = 7, 5t = 5 × 7 = 35

1. For z / 3, the table is represented as below

|  |  |
| --- | --- |
| z | z / 3 |
| 8 | 8 / 3 = |
| 9 | 9 / 3 = 3 |
| 10 | 10 / 3 = |
| 11 | 11 / 3 = |
| 12 | 12 / 3 = 4 |
| 13 | 13 / 3 = |
| 14 | 14 / 3 = |
| 15 | 15 / 3 = 5 |

|  |  |
| --- | --- |
| 16 | 16 / 3 = |

Now, by inspection we may conclude that z = 12 is the solution of the above equation since for z = 12, z / 3 = 4

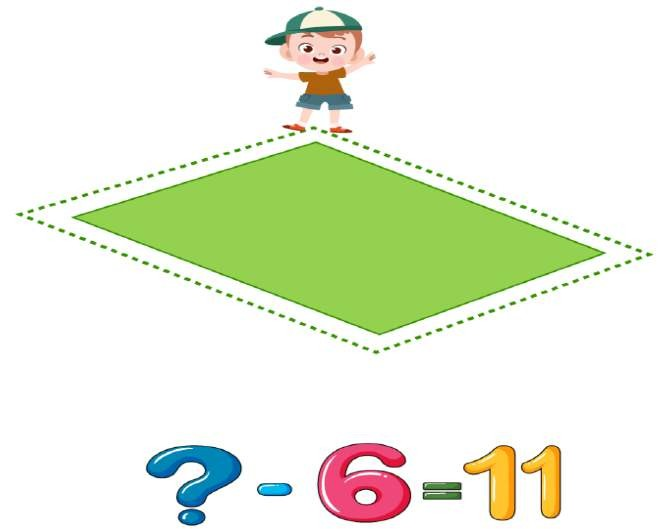
1. For m – 7, the table is represented as below

|  |  |
| --- | --- |
| m | m – 7 |
| 5 | 5 – 7 = -2 |
| 6 | 6 – 7 = -1 |
| 7 | 7 – 7 = 0 |
| 8 | 8 – 7 = 1 |
| 9 | 9 – 7 = 2 |
| 10 | 10 – 7 = 3 |
| 11 | 11 – 7 = 4 |
| 12 | 12 – 7 = 5 |
| 13 | 13 – 7 = 6 |

Now, by inspection we may conclude that m = 10 is the solution of the above equation since, for m = 10, m – 7 = 10 – 7 = 3

## Solve the following riddles, you may yourself construct such riddles.

**Who am I?**



1. **Go round a square Counting every corner Thrice and no more! Add the count to me**

**To get exactly thirty four!**

1. **For each day of the week Make an upcount from me If you make no mistake**

**You will get twenty three!**

1. **I am a special number Take away from me a six! A whole cricket team**

**You will still be able to fix!**

1. **Tell me who I am**

**I shall give a pretty clue! You will get me back**

**If you take me out of twenty two! Solutions:**

1. There are 4 corners in a square.

Thrice the number of corners in the square = 3 × 4 = 12 When 12 is added to the number it becomes 34

So, the number will be the difference of 34 and 12 34 – 12 = 22

1. The result was 23 when the old number was up counted on Sunday The result was 22 when the old number was up counted on Saturday The result was 21 when the old number was up counted on Friday The result was 20 when the old number was up counted on Thursday

The result was 19 when the old number was up counted on Wednesday The result was 18 when the old number was up counted on Tuesday The result was 17 when the old number was up counted on Monday

`Hence, the number taken at starting was 17 – 1 = 16

1. There are 11 players in a cricket team

If 6 is subtracted from a required number it will be 11 11 + 6 = 17

Hence, the number is 17

1. The required number is such that if it is subtracted from 22 the result is the number itself. The number is 11 because if it is subtracted from 22 the result will be 11 only.