

CBSE NCERT Solutions for Class 7 Mathematics Chapter 1

Back of Chapter Questions

Exercise: 1.1

1. Following number line shows the temperature in degree Celsius ($^{\circ}\text{C}$) at different places on a particular day.
- Observe this number line and write the temperature of the places marked on it.
 - What is the temperature difference between the hottest and the coldest places among the above?
 - What is the temperature difference between Lahulspiti and Srinagar?
 - Can we say temperature of Srinagar and Shimla taken together is less than the temperature at Shimla? Is it also less than the temperature at Srinagar?

Solution:

(a)

Place	Temperature ($^{\circ}\text{C}$)
Lahulspiti	-8
Srinagar	-2
Shimla	5
Ooty	14
Bengaluru	22

- (b) The temperature at the hottest place = 22°C
The temperature at the coldest place = -2°C
Therefore, the difference = $22^{\circ}\text{C} - (-2^{\circ}\text{C})$
= 24°C
- (c) The temperature at Lahulspiti = -8°C

The temperature at Srinagar = -2°C

Therefore, the difference = $-2^{\circ}\text{C} - (-8^{\circ}\text{C})$
= 6°C

- (d) The temperature of Srinagar and Shimla taken together = $-2^{\circ}\text{C} + 5^{\circ}\text{C}$
= 3°C

The temperature at Shimla = $5^{\circ}\text{C} > 3^{\circ}\text{C}$. Therefore the temperature of Srinagar and Shimla taken together is less than that of Shimla.

The temperature at Srinagar = $-2^{\circ}\text{C} < 3^{\circ}\text{C}$. Therefore, the temperature of Srinagar and Shimla taken together is not less than that of Srinagar

2. In a quiz, positive marks are given for correct answers and negative marks are given for incorrect answers. If Jack's scores in five successive rounds were 25, -5 , -10 , 15 and 10, what was his total at the end?

Solution:

Jack's scores in five successive rounds are 25, -5 , -10 , 15, and 10

His total scores at the end = $25 + (-5) + (-10) + (15) + (10)$
= 35

3. At Srinagar temperature was -5°C on Monday and then it dropped by 2°C on Tuesday. What was the temperature of Srinagar on Tuesday? On Wednesday, it rose by 4°C . What was the temperature on this day?

Solution:

Temperature on Monday = -5°C

It dropped by 2°C

Therefore, temperature on Tuesday = $-5^{\circ}\text{C} - 2^{\circ}\text{C}$
= -7°C

It rose again on Wednesday by 4°C

Therefore, temperature on Wednesday = $-7^{\circ}\text{C} + 4^{\circ}\text{C}$
= -3°C

4. A plane is flying at the height of 5000 m above the sea level. At a particular point, it is exactly above a submarine floating 1200 m below the sea level. What is the vertical distance between them?

Solution:

Plane flying above sea level at height = 5000 m

Submarine floating below the sea level = 1200 m

Therefore, the vertical distance between them = $5000 + 1200$
 = 6200 m

5. Mohan deposits Rs 2,000 in his bank account and withdraws Rs 1,642 from it, the next day. If withdrawal of amount from the account is represented by a negative integer, then how will you represent the amount deposited? Find the balance in Mohan's account after the withdrawal.

Solution:

Amount deposited in the bank = Rs 2000

Amount withdrawn the next day = Rs 1642

Therefore, the balance amount in the account = $2000 - 1642$
 = Rs 358

6. Rita goes 20 km towards east from a point A to the point B. From B, she moves 30 km towards west along the same road. If the distance towards east is represented by a positive integer then, how will you represent the distance travelled towards west? By which integer will you represent her final position from A?

Solution:

Rita moves towards east from A to B = 20 km

Let us assume C as the point travelled westwards

She moves towards west along the same road i.e from B to C = 30 km

Therefore, distance travelled by her towards west from A to B = $20 - 30$
 = -10 km

∴ Rita's final position from A to C = -10 km

7. In a magic square each row, column and diagonal have the same sum. Check which of the following is a magic square

(i)

5	-1	-4
-5	-2	7
0	3	-3

(ii)

1	-10	0
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-4	-3	-2
-6	4	-7

Solution:

(i) Sum of the rows:

$$5 + -1 + -4 = 0$$

$$-5 + -2 + 7 = 0$$

$$0 + 3 + -3 = 0$$

Sum of the columns:

$$5 + -5 + 0 = 0$$

$$-1 + -2 + 3 = 0$$

$$-4 + 7 + -3 = 0$$

Sum of the diagonals:

$$5 + -2 + -3 = 0$$

$$-4 + -2 + 0 = -6$$

Thus, this is not a magic square because all the sums are not equal

(ii) Sum of the rows:

$$1 + -10 + 0 = -9$$

$$-4 + -3 + -2 = -9$$

$$-6 + 4 + -7 = -9$$

Sum of the columns:

$$1 + -4 + -6 = -9$$

$$-10 + -3 + 4 = -9$$

$$0 + -2 + -7 = -9$$

Sum of the diagonals:

$$1 + -3 + -7 = 0$$

$$0 + -3 + -6 = -9$$

Thus, this is a magic square because all the sums are equal

8. Verify $a - (-b) = a + b$ for the following values of a and b.(i) $a = 21, b = 18$

(ii) $a = 118, b = 125$

(iii) $a = 75, b = 84$

(iv) $a = 28, b = 11$

Solution:

LHS $a - (-b) = 21 - (-18) = 39$

RHS $a + b = 21 + 18 = 39$

LHS = RHS

Thus verified

LHS $a - (-b) = 118 - (-125) = 243$

RHS $a + b = 118 + 125 = 243$

LHS = RHS

Thus verified

LHS $a - (-b) = 75 - (-84) = 159$

RHS $a + b = 75 + 84 = 159$

LHS = RHS

Thus verified

LHS $a - (-b) = 28 - (-11) = 39$

RHS $a + b = 28 + 11 = 39$

LHS = RHS

Thus verified

9. Use the sign of $>$, $<$ or $=$ in the box to make the statements true.

(a) $(-8) + (-4) \square (-8) - (-4)$

(b) $(-3) + 7 - (19) \square 15 - 8 + (-9)$

(c) $23 - 41 + 11 \square 23 - 41 - 11$

(d) $39 + (-24) - (15) \square 36 + (-52) - (-36)$

(e) $-231 + 79 + 51 \square -399 + 159 + 81$

Solution:

(a) $-12 < -4$

(b) $-15 < -2$

- (c) $-7 > -29$
(d) $0 < 20$
(e) $-101 > -159$

10. A water tank has steps inside it. A monkey is sitting on the topmost step (i.e. the first step). The water level is at the ninth step.

- (i) He jumps 3 steps down and then jumps back 2 steps up. In how many jumps will he reach the water level?
(ii) After drinking water, he wants to go back. For this, he jumps 4 steps up and then jumps back 2 steps down in every move. In how many jumps will he reach back the top step?
(iii) If the number of steps moved down is represented by negative integers and the number of steps moved up by positive integers, represent his moves in part (i) and (ii) by completing the following;

(a) $- 3 + 2 - \dots = - 8$

(b) $4 - 2 + \dots = 8.$

In (a) the sum $(- 8)$ represents going down by eight steps. So, what will the sum 8 in (b) represent?

Solution:

Monkey is on the first step; water level is at the 9th step

1st jump = $1 + 3 - 2 = 2$

2nd jump = $2 + 3 - 2 = 3$

3rd jump = $3 + 3 - 2 = 4$

4th jump = $4 + 3 - 2 = 5$

5th jump = $5 + 3 - 2 = 6$

6th jump = $6 + 3 - 2 = 7$

7th jump = $7 + 3 - 2 = 8$

8th jump = $8 + 3 - 2 = 9$

Therefore in 8 jumps the monkey will reach the water level

1st jump = $9 - 4 + 2 = 7$

2nd jump = $7 - 4 + 2 = 5$

3rd jump = $5 - 4 + 2 = 3$

4th jump = $3 - 4 + 2 = 1$

Therefore in 4 jumps he will reach back the top

$$(a) \quad -3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 = -8$$

$$(b) \quad 4 - 2 + 4 - 2 + 4 - 2 + 4 - 2 = 8$$

So, the sum 8 in B represents climbing up the top

Exercise: 1.2

1. Write down a pair of integers whose:
sum is -7 (b) difference is -10 (c) sum is 0

Solution:

A pair of integers whose sum is -7

$$-5 + (-2) = -7$$

A pair of integers whose difference is -10

$$-17 - (-7) = -10$$

A pair of integers whose sum is 0

$$-8 + 8 = 0$$

2. (a) Write a pair of negative integers whose difference gives 8 .
(b) Write a negative integer and a positive integer whose sum is -5 .
(c) Write a negative integer and a positive integer whose difference is -3 .

Solution:

A pair of negative integers whose difference is 8

$$-6 - (-14) = 8$$

A negative integer and a positive integer whose sum is -5

$$-12 + (7) = -5$$

A negative integer and a positive integer whose difference is -3

$$-1 - (2)$$

3. In a quiz, team A scored $-40, 10, 0$ and team B scored $10, 0, -40$ in three successive rounds. Which team scored more? Can we say that we can add integers in any order?

Solution:

$$\text{Total of Team A scores} = -40 + 10 + 0$$

$$= -30$$

$$\text{Total of Team B scores} = 10 + 0 + (-40)$$

$$= -30$$

Both the teams have same scores. Therefore, yes, we can say that integers can be added in any order.

4. Fill in the blanks to make the following statements true:

(i) $(-5) + (-8) = (-8) + (\dots\dots\dots)$

(ii) $-53 + \dots\dots\dots = -53$

(iii) $17 + \dots\dots\dots = 0$

(iv) $[13 + (-12)] + (\dots\dots\dots) = 13 + [(-12) + (-7)]$

(v) $(-4) + [15 + (-3)] = [-4 + 15] + \dots\dots\dots$

Solution:

(i) LHS: $-5 + (-8) = -13$

\therefore RHS: $-8 + (-5) = -13$ (commutative property)

(ii) $-53 + 0 = -53$ (zero additive property)

(iii) $17 + (-17) = 0$ (additive identity)

(iv) RHS: $13 + [(-12) + (-7)] = 13 + (-19)$ (associative property)

$$= -6$$

\therefore LHS: $13 + (-12) + \dots = -6$

$$1 + (-7) = -6$$

(v) LHS: $(-4) + [15 + (-3)] = -4 + 12$ (associative property)

$$= 8$$

\therefore RHS: $(-4 + 15) + \dots = 8$

$$11 + (-3) = 8$$

Exercise: 1.3

1. Find each of the following products:

(a) $3 \times (-1)$

(b) $(-1) \times 225$

- (c) $(-21) \times (-30)$
- (d) $(-316) \times (-1)$
- (e) $(-15) \times 0 \times (-18)$
- (f) $(-12) \times (-11) \times (10)$
- (g) $9 \times (-3) \times (-6)$
- (h) $(-18) \times (-5) \times (-4)$
- (i) $(-1) \times (-2) \times (-3) \times 4$
- (j) $(-3) \times (-6) \times (-2) \times (-1)$

Solution:

- (a) $3 \times (-1) = -3$
- (b) $(-1) \times 225 = -225$
- (c) $(-21) \times (-30) = 630$
- (d) $(-316) \times (-1) = 316$
- (e) $(-15) \times 0 \times (-18) = 0$
- (f) $(-12) \times (-11) \times (10) = 1320$
- (g) $9 \times (-3) \times (-6) = 162$
- (h) $(-18) \times (-5) \times (-4) = -360$
- (i) $(-1) \times (-2) \times (-3) \times 4 = -24$
- (j) $(-3) \times (-6) \times (-2) \times (-1) = 36$

2. Verify the following:

- (a) $18 \times [7 + (-3)] = [18 \times 7] + [18 \times (-3)]$
- (b) $(-21) \times [(-4) + (-6)] = [(-21) \times (-4)] + [(-21) \times (-6)]$

Solution:

- (a) $18 \times [7 + (-3)] = [18 \times 7] + [18 \times (-3)]$ (using distributive property)

$$\text{LHS: } 18 \times [7 + (-3)] = 18 \times 4$$

$$= 72$$

$$\text{RHS: } [18 \times 7] + [18 \times (-3)] = 126 + (-54)$$

$$= 72$$

$$\Rightarrow \text{LHS} = \text{RHS}, \therefore \text{hence verified}$$

$$(b) \quad (-21) \times [(-4) + (-6)] = [(-21) \times (-4)] + [(-21) \times (-6)]$$

$$\begin{aligned} \text{LHS: } & (-21) \times [(-4) + (-6)] = -21 \times (-10) \\ & = 210 \end{aligned}$$

$$\begin{aligned} \text{RHS: } & [(-21) \times (-4)] + [(-21) \times (-6)] = 84 + 126 \\ & = 210 \end{aligned}$$

$$\Rightarrow \text{LHS} = \text{RHS}, \therefore \text{hence verified}$$

3. (i) For any integer a , what is $(-1) \times a$ equal to?
 (ii) Determine the integer whose product with (-1) is (a) -22 (b) 37 (c) 0

Solution:

- (i) For any integer a ,

$$(-1) \times a = -a \text{ (additive inverse of an integer property)}$$

- (ii) (a) -1 is to be multiplied with 22 for the product to be -22

$$\text{i.e., } (-1) \times 22 = -22$$

- (b) -1 is to be multiplied with -37 for the product to be 37

$$\text{i.e., } (-1) \times -37 = 37$$

- (c) -1 is to be multiplied with 0 for the product to be 0

$$\text{i.e., } (-1) \times 0 = 0$$

4. Starting from $(-1) \times 5$, write various products showing some pattern to show

$$(-1) \times (-1) = 1.$$

Solution:

$$(-1) \times 5 = -5$$

$$(-1) \times 4 = -4$$

$$(-1) \times 3 = -3$$

$$(-1) \times 2 = -2$$

$$(-1) \times 1 = -1$$

$$(-1) \times 0 = 0$$

$$(-1) \times (-1) = 1$$

5. Find the product, using suitable properties:

(a) $26 \times (-48) + (-48) \times (-36)$

- (b) $8 \times 53 \times (-125)$
(c) $15 \times (-25) \times (-4) \times (-10)$
(d) $(-41) \times 102$
(e) $625 \times (-35) + (-625) \times 65$
(f) $7 \times (50 - 2)$
(g) $(-17) \times (-29)$
(h) $(-57) \times (-19) + 57$

Solution:

- (a) $26 \times (-48) + (-48) \times (-36) = -48 \times [(26 + (-36))]$ (distributive property)
 $= -48 \times (-10)$
 $= 480$
- (b) $8 \times 53 \times (-125) = 53 \times (8 \times -125)$ (commutative property)
 $= 53 \times (-1000)$
 $= -53000$
- (c) $15 \times (-25) \times (-4) \times (-10) = [15 \times (-10)] \times [(-25) \times (-4)]$ (commutative property)
 $= -150 \times 100$
 $= -15000$
- (d) $(-41) \times 102 = (-41) \times (100 + 2)$
 $= (-41 \times 100) + (-41 \times 2)$ (distributive property)
 $= -4100 + (-82)$
 $= -4182$
- (e) $625 \times (-35) + (-625) \times 65 = (625) \times [(-35) + (-65)]$ (distributive property)
 $= 625 \times (-100)$
 $= -62500$
- (f) $7 \times (50 - 2) = (7 \times 50) - (7 \times 2)$
 $= 350 - 14$
 $= 336$ (distributive property)

$$\begin{aligned} \text{(g)} \quad & (-17) \times (-29) = -17 \times (-30 + 1) \\ & = (-17 \times -30) + (-17 \times 1) \text{(distributive property)} \\ & = 510 + (-17) \\ & = 493 \end{aligned}$$

$$\begin{aligned} \text{(h)} \quad & (-57) \times (-19) + 57 = [(-57) \times (-19)] + [57 \times 1] \text{(distributive property)} \\ & = 57 \times (19 + 1) \\ & = 57 \times 20 \\ & = 1140 \end{aligned}$$

6. A certain freezing process requires that room temperature be lowered from 40°C at the rate of 5°C every hour. What will be the room temperature 10 hours after the process begins?

Solution:

Present room temperature = 40°C

Temperature to be reduced every hour = 5°C

$$\begin{aligned} \text{Therefore, the room temperature after 10 hours} &= 40^{\circ}\text{C} - (10 \times 5^{\circ}\text{C}) \\ &= 40^{\circ}\text{C} - 50^{\circ}\text{C} \\ &= -10^{\circ}\text{C} \end{aligned}$$

7. In a class test containing 10 questions, 5 marks are awarded for every correct answer and (-2) marks are awarded for every incorrect answer and 0 for questions not attempted.

- (i) Mohan gets four correct and six incorrect answers. What is his score?
- (ii) Reshma gets five correct answers and five incorrect answers, what is her score?
- (iii) Heena gets two correct and five incorrect answers out of seven questions she attempts. What is her score?

Solution:

$$\text{Four correct answers} = 4 \times 5 = 20$$

$$\text{Six incorrect answers} = 6 \times (-2) = -12$$

$$\text{Therefore, Mohan's total scores} = 20 - 12$$

$$= 8$$

$$\text{Five correct answers} = 5 \times 5 = 25$$

$$\text{Five incorrect answers} = 5 \times (-2) = -10$$

$$\begin{aligned}\text{Therefore, Reshma's total scores} &= 25 - 10 \\ &= 15\end{aligned}$$

$$\text{Two correct answers} = 2 \times 5 = 10$$

$$\text{Five incorrect answers} = 5 \times (-2) = -10$$

$$\begin{aligned}\text{Therefore, Heena's total scores} &= 10 - 10 \\ &= 0\end{aligned}$$

8. A cement company earns a profit of Rs 8 per bag of white cement sold and a loss of Rs per bag of grey cement sold. (a) The company sells 3,000 bags of white cement and 5,000 bags of grey cement in a month. What is its profit or loss? What is the number of white cement bags it must sell to have neither profit nor loss, if the number of grey bags sold is 6,400 bags?

Solution:

$$\begin{aligned}\text{Profit @ Rs 8 on 3000 bags of white cement} &= 3000 \times 8 \\ &= \text{Rs } 24000\end{aligned}$$

$$\begin{aligned}\text{Loss @ Rs 5 on 5000 bags of grey cement} &= 5000 \times 5 \\ &= \text{Rs } 25000\end{aligned}$$

$$\begin{aligned}\text{The difference} &= 24000 - 25000 \\ &= -1000\end{aligned}$$

$$\therefore \text{Loss for the company} = \text{Rs } 1000$$

$$\text{Number of grey bags sold} = 6400$$

$$\begin{aligned}\Rightarrow \text{loss on grey bags} &= 6400 \times 5 \\ &= \text{Rs } 32000\end{aligned}$$

To have neither profit nor loss, the profit on white bags should equal the loss on grey bags i.e., Rs 32000

$$\begin{aligned}\text{Therefore, number of white bags to be sold @ Rs } 8 &= 32000 \div 8 \\ &= 4000 \text{ bags}\end{aligned}$$

9. Replace the blank with an integer to make it a true statement.
- (a) $(-3) \times \underline{\quad} = 27$
- (b) $5 \times \underline{\quad} = -35$
- (c) $\underline{\quad} \times (-8) = -56$

$$(d) \quad \underline{\hspace{1cm}} \times (-12) = 132$$

Solution:

$$(a) \quad (-3) \times \underline{\hspace{1cm}} = 27$$

$$\Rightarrow \frac{27}{-3} = -9$$

$$\therefore (-3) \times (-9) = 27$$

$$(b) \quad 5 \times \underline{\hspace{1cm}} = -35$$

$$\Rightarrow -\frac{35}{5} = -7$$

$$\therefore 5 \times (-7) = -35$$

$$(c) \quad \underline{\hspace{1cm}} \times (-8) = -56$$

$$\Rightarrow -\frac{56}{-8} = 7$$

$$\therefore 7 \times (-8) = -56$$

$$(d) \quad \underline{\hspace{1cm}} \times (-12) = 132$$

$$\Rightarrow \frac{132}{-12} = -11$$

$$\therefore (-11) \times (-12) = 132$$

Exercise: 1.4

1. Evaluate each of the following:

$$(a) \quad (-30) \div 10$$

$$(b) \quad 50 \div (-5)$$

$$(c) \quad (-36) \div (-9)$$

$$(d) \quad (-49) \div (49)$$

$$(e) \quad 13 \div [(-2) + 1]$$

$$(f) \quad 0 \div (-12)$$

$$(g) \quad (-31) \div [(-30) + (-1)]$$

$$(h) \quad [(-36) \div 12] \div 3$$

$$(i) \quad [(-6) + 5] \div [(-2) + 1]$$

Solution:

- (a) $(-30) \div 10 = -3$
(b) $50 \div (-5) = -10$
(c) $(-36) \div (-9) = 4$
(d) $(-49) \div (49) = -1$
(e) $13 \div [(-2) + 1] = 13 \div (-1) = -13$
(f) $0 \div (-12) = 0$
(g) $(-31) \div [(-30) + (-1)] = (-31) \div (-31) = 1$
(h) $[(-36) \div 12] \div 3 = (-3) \div 3 = -1$
(i) $[(-6) + 5] \div [(-2) + 1] = (-1) \div (-1) = 1$

2. Verify that $a \div (b + c) \neq (a \div b) + (a \div c)$ for each of the following values of a, b and c.

- (a) $a = 12, b = -4, c = 2$
(b) $a = (-10), b = 1, c = 1$

Solution:

(a) To verify

$$a \div (b + c) \neq (a \div b) + (a \div c)$$

$$\text{LHS: } a \div (b + c) = 12 \div [(-4) + 2]$$

$$= 12 \div -2$$

$$= -6$$

$$\text{RHS: } (a \div b) + (a \div c) = [12 \div (-4)] + (12 \div 2)$$

$$= -3 + 6$$

$$= 3$$

LHS \neq RHS, Hence verified

(b) To verify

$$a \div (b + c) \neq (a \div b) + (a \div c)$$

$$\text{LHS: } a \div (b + c) = (-10) \div (1 + 1)$$

$$= -10 \div 2$$

$$= -5$$

$$\text{RHS: } (a \div b) + (a \div c) = [(-10) \div 1] + [(-10) \div 1]$$

$$= (-10) + (-10)$$

$$= -20$$

LHS \neq RHS, Hence verified

3. Fill in the blanks:

(a) $369 \div \underline{\quad} = 369$

(b) $(-75) \div \underline{\quad} = -1$

(c) $(-206) \div \underline{\quad} = 1$

(d) $-87 \div \underline{\quad} = 87$

(e) $\underline{\quad} \div 1 = -87$

(f) $\underline{\quad} \div 48 = -1$

(g) $20 \div \underline{\quad} = -2$

(h) $\underline{\quad} \div (4) = -3$

Solution:

(a) $369 \div 1 = 369$

(b) $(-75) \div 75 = -1$

(c) $(-206) \div (-206) = 1$

(d) $(-87) \div (-1) = 87$

(e) $(-87) \div 1 = -87$

(f) $(-48) \div 48 = -1$

(g) $20 \div (-10) = -2$

(h) $(-12) \div 4 = -3$

4. Write five pairs of integers (a, b) such that $a \div b = -3$. One such pair is (6, -2)

because $6 \div (-2) = (-3)$

Solution:

Five pairs of integers (a, b) such that $a \div b = -3$

(i) $(-9, 3) \Rightarrow (-9) \div 3 = -3$

(ii) $(12, -4) \Rightarrow 12 \div (-4) = -3$

(iii) $(-21, 7) \Rightarrow (-21) \div 7 = -3$

(iv) $(3, -1) \Rightarrow 3 \div (-1) = -3$

(v) $(-15, 5) \Rightarrow (-15) \div (5) = -3$

5. The temperature at 12 noon was 10°C above zero. If it decreases at the rate of 2°C per hour until midnight, at what time would the temperature be 8°C below zero? What would be the temperature at mid-night?

Solution:

The temperature at 12 noon = 10°C

It decreases at the rate of 2°C per hour

Let us assume the time taken for decrease in the temperature to be T

$$\Rightarrow 10^{\circ}\text{C} - 2T$$

$$\therefore \text{for temperature to be } -8^{\circ}\text{C} \Rightarrow 10 - 2T = -8$$

$$-2T = -18$$

$$T = \frac{-18}{-2}$$

$$= 9$$

Thus, the temperature would be 8°C below zero at 9 pm

6. In a class test (+ 3) marks are given for every correct answer and (-2) marks are given for every incorrect answer and no marks for not attempting any question. (i) Radhika scored 20 marks. If she has got 12 correct answers, how many questions has she attempted incorrectly? (ii) Mohini scores -5 marks in this test, though she has got 7 correct answers. How many questions has she attempted incorrectly?

Solution:

(i) Marks given for every correct answer = 3

Marks given for every wrong answer = -2

Marks scored by Radhika = 20

Number of correct answers = 12 $\Rightarrow 12 \times 3$

i.e., marks scored for correct answers = 36

\Rightarrow marks scored for incorrect answers = $20 - 36$

$$= -16$$

$$\therefore \text{no of answers attempted incorrectly} = (-16) \div (-2)$$

$$= 8$$

(ii) Marks given for every correct answer = 3

Marks given for every wrong answer = -2

$$\text{Marks scored by Mohini} = -5$$

$$\text{Number of correct answers} = 7 \Rightarrow 7 \times 3$$

$$\text{i.e., marks scored for correct answers} = 21$$

$$\Rightarrow \text{marks scored for incorrect answers} = (-5) - 21$$

$$= -26$$

$$\therefore \text{no of answers attempted incorrectly} = (-26) \div (-2)$$

$$= 13$$

7. An elevator descends into a mine shaft at the rate of 6 m/min. If the descent starts from 10 m above the ground level, how long will it take to reach -350 m.

Solution:

The elevator descends at the rate of 6 m per min

The descent starts at 10 m above the ground level and it needs to cover 350 m below ground.

$$\text{Therefore, total distance} = 10 + 350$$

$$= 360 \text{ m}$$

$$\therefore \text{time taken to reach the total distance} = 360 \div 6$$

$$= 60 \text{ mins}$$

i.e., 1 hour