पुष्पना International School
Shree Swaminarayan Gurukul, Zundal

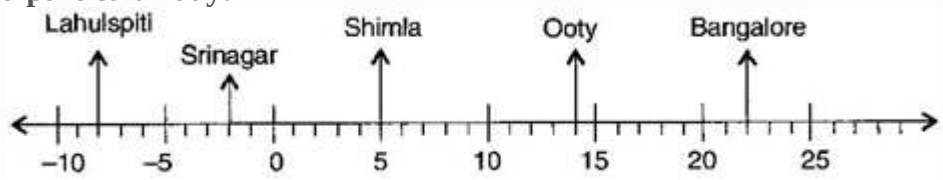
SUB- MATHS

CLASS-7 **SAMPLE COPY**
(EX 1.1)

- **SUMMARY**
- **INTRODUCTION**
- **ADDITION AND SUBTRACTION OF INTEGERS**
- **PROPERTIES OF INTEGERS**
- **CLOSURE PROPERTY**
- **COMMUTATIVE PROPERTY**
- **ASSOCIATIVE PROPERTY**
- **ADDITIVE INVERSE OF INTEGERS**

EXERCISE-1.4

Question 1
Following number line shows the temperature in degree Celsius {∘∘C} at different places on a particular day:



(a) Observe this number line and write the temperature of the places marked on it.

(b) What is the temperature difference between the hottest and the coldest places among the above?

(c) What is the temperature difference between Lahulspiti and Srinagar?

(d) 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?

Answer:
(a) The temperature of the places marked on it is:

Places	**Temperature**
Bangalore	22oC
Ooty	14oC
Shimla	5oC
Srinagar	–2oC
Lahulspiti	–8oC

(b) The temperature of the hottest place Bangalore = 22Ctemperature of the coldest place Lahulspiti = –8oC

Difference = 22oC – (–8oC) = 30oC

(c)The temperature of Srinagar = –2C

The temperature of Lahulspiti = –8C

Difference = –2oC + (–8oC) = 6oC

(d)The temperature of Srinagar and Shimla = 5oC + (–2oC) = 5oC –2oC = 3oC

The temperature at Shimla =5oC

Therefore, 3oC < 5oC

Thus, temperature of Srinagar and Shimla taken together is less than the temperature at Shimla.

Now, Temperature of Srinagar = –2oC

Therefore, 3oC > –2oC

No, it is not less than the temperature at Srinagar.

Question 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?**
Answer:
Jack's scores in five successive rounds are 25,–5,–10,15 and 10..
Total marks got by Jack = 25+(–5)+(–10)+15+10
= 25 – 15 + 25 = 35

Thus, 35 marks are got by Jack in a quiz.

Question 3.At Srinagar temperature was –5∘–5∘**C on Monday and then it dropped by** 2∘2∘**C on Tuesday. What was the temperature of Srinagar on Tuesday? On Wednesday, it rose by** 4∘4∘**C. What was the temperature on this day?**
Answer:
On Monday, temperature at Srinagar = $-5^{o}C$

On Tuesday, temperature dropped = $2^{o}C$

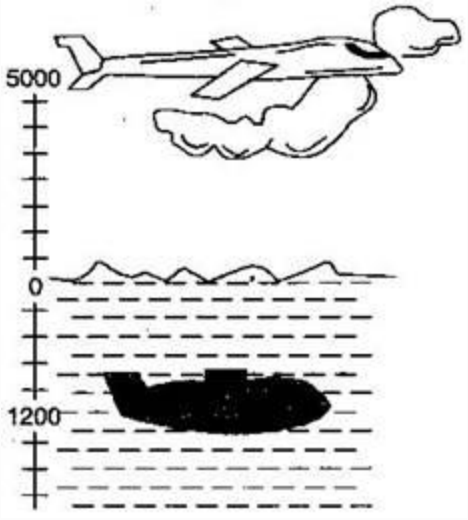
∴∴ Temperature on Tuesday = $-5^{o}C - 2^{o}C = -7^{o}C$

On Wednesday, temperature rose up = $4^{o}C$

∴∴ Temperature on Wednesday = $-7^{o}C + 4^{o}C = -3^{o}C$

Thus, temperature on Tuesday and Wednesday was $-7^{o}C$and $-3^{o}C$respectively.

Question 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?



Answer:
Height of a place above the sea level = 5000 m

Floating a submarine below the sea level = 1200 m

∴∴ The vertical distance between the plane and the submarine = 5000 + 1200 = 6200 m

Thus, the vertical distance between the plane and the submarine is 6200 m.

Question 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 accounts after the withdrawal?
Answer:
Deposit amount = Rs. 2,000 and Withdrawal amount = Rs. 1,642

∴∴ Balance = 2,000 – 1,642 = Rs. 358
Thus, the balance in Mohan's account after withdrawal is Rs. 358.

Question 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?
Answer:

WEST **B** **EAST**

A

According to the number line, Rita moves towards east is represented by a positive integer. But she moves in opposite direction means Rita moves west, is represented by negative integer.

Distance from A to B = 20 km

Distance from B to C = 30 km

Distance from A to C = 20 – 30 = –10 km

Thus, Rital is at final position from A to C is –10 km.

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Question 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) $a=28, b=11$

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Answer:

(i) Given: $a = 21, b = 18$

We have $a - (-b) = a + b$

Putting the values in L.H.S. = $a - (-b) = 21 - (-18)$ = 21 + 18 = 39

Putting the values in R.H.S. = $a + b$ = 21 + 19 = 39

Since, L.H.S. = R.H.S Hence, verified.

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

We have $a - (-b) = a + b$

Putting the values in L.H.S. = $a - (-b) = 118 - (-125)$ = 118 + 125 = 243

Putting the values in R.H.S. = $a + b$ = 118 + 125 = 243

Since, L.H.S. = R.H.S Hence, verified.

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

We have $a - (-b) = a + b$

Putting the values in L.H.S. = $a - (-b) = 75 - (-84)$ = 75 + 84 = 159

Putting the values in R.H.S. = $a + b$ = 75 + 84 = 159

Since, L.H.S. = R.H.S Hence, verified.

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

We have $a - (-b) = a + b$

Putting the values in L.H.S. = $a - (-b) = 28 - (-11)$ = 28 + 11 = 39

Putting the values in R.H.S. = $a + b$ = 28 + 11 = 39

Since, L.H.S. = R.H.S Hence, verified.

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

Answer:

Answer:

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

$\Rightarrow -12\square-4 \Rightarrow -12\boxed{<}-4$

(b) $(-3)+7-(19)\square15-8+(-9) \Rightarrow -3+7-19\square15-8-9$

$\Rightarrow 4-19\square15-17 \Rightarrow -15\square-2$

$\Rightarrow -15\boxed{<}-2$

(c) $23-41+11\square23-41-11 \Rightarrow -18+11\square23-52$

$\Rightarrow -7\square-29 \Rightarrow -7\boxed{>}-29$

(d) $39+(-24)-(15)\square36+(-52)-(-36) \Rightarrow 39-24-15\square36-52+36$

$\Rightarrow 39-39\square72-52 \Rightarrow 0\square20$

$\Rightarrow 0\boxed{<}20$

(e) $(-231)+79+51\square(-399)+159+81 \Rightarrow -231+130\square-399+240$

$\Rightarrow -101\square-159 \Rightarrow -101\boxed{>}-159$

EXERCISE-1.2

Question 1.Write down a pair of integers whose:

(a) sum is –7

(b) difference is –10

(c) sum is 0

Answer:

(a) One such pair whose sum is –7: –5+(–2)= –7

(b) One such pair whose difference is –10: –2–8= –10

(c) One such pair whose sum is 0: $-5+5=0$

Question 2.(a) Write a pair of negative integers whose difference gives 8.

(c) Write a negative integer and a positive integer whose is –5..

(d) Write a negative integer and a positive integer whose difference is –3.

Answer:

(a) $-2-(-10)\ -2+10=8$

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

(c) $(-2)-1=-2-1=-3$

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

Answer:

Team A scored $-40,10,0$

Total score of Team A = $-40+10+0=-30$

Team B scored $10,0,-40$

Total score of Team B = $10+0+(-40)=10+0-40=-30$

Thus, scores of both teams are same.

Yes, we can add integers in any order due to commutative property.

Question 4.Fill in the blanks to make the following statements true:
(i)(–5)+(–8)=(–8)+(…….)

(ii)–53+…….= –53

(iii)17 + ……. = 0

(iv)[13+(–12)]+(…….)=13+[(–12)+(–7)]

(v)(–4)+[15+(–3)]=[–4+15]+…….
Answer:
(i) (–5)+(–8)=(–8)+(–5) [Commutative property]

(ii) –53+0 = –53 [Zero additive property]

(iii) 17+(–17)−−−−−=0 (Additive identity]

(iv)[13+(12)]+(–7)−−−−=13+[(–12)+(–7)] [Associative property]

(–4)+[15+(–3)]=[–4+15]+(–3)−−−− [Associative property]

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EXERCISE-1.3

Question 1.Find the each of the following products:
(a) 3 x (–1)

(b) (–1) x 225

(c) (–21) x (–30)

(d) (–316) x (–1)

(e) (–15) x 0 x (–18)

(f) (–12) x (–11) x (10)

(g) 9 x (–3) x (–6)

(h) (–18) x (–5) x (–4)

(i) (–1) x (–2) x (–3) x 4

(j) (–3) x (–6) x (2) x (–1)

Answer:
(a) 3 x (–1) = –3

(b) (–1) x 225 = –225

(c) (–21) x (–30) = 630

(d) (–316) x (–1) = 316

(e) (–15) x 0 x (–18) = 0

(f) (–12) x (–11) x (10) = 132 x 10 = 1320

(g) 9 x (–3) x (–6) = 9 x 18 = 162

(h) (–18) x (–5) x (–4) = 90 x (–4) = –360

(i) (–1) x (–2) x (–3) x 4 = (–6 x 4) = –24

(j) (–3) x (–6) x (2) x (–1) = (–18) x (–2) = 36

Question 2.Verify the following:
(a) 18 x [7 + (–3)] = [18 x 7] + [18 x (–3)]

(b) (–21) x [(–4) + (–6)] = [(–21) x (-4)] + [(–21) x (–6)]

Answer:
(a) 18 x [7 + (–3)] = [18 x 7] + [18 x (–3)]

⇒ 18 x 4 = 126 + (–54)
⇒ 72 = 72
⇒ L.H.S. = R.H.S. Hence verified.

(b) (–21) x [(–4) + (–6)] = [(–21) x (–4)] + [(–21) x (–6)]

⇒ (–21) x (–10) = 84 + 126

⇒ 210 = 210

⇒ L.H.S. = R.H.S. Hence verified.

NCERT Solutions for Class 7 Maths Exercise 1.3

Question 3.
(i)For any integer a,a, what is (–1)×a(–1)×a equal to?

(ii)Determine the integer whose product with (–1)(–1) is
:
(a) –22

(b) 37

(c) 0

Answer:
(i) (–1)×a=–a,(–1)×a=–a, where a is an integer.

(ii) (a) (–1)×(–22)=22

(c) (–1)×37=–37

(d) (–1)×0=0

Question 4.Starting from (–1)×5,(–1)×5, **write various products showing some patterns to show** (–1)×(–1)=1.(–1)×(–1)=1.

Answer:
(–1)×5= –5 (–1)×4=–4

(–1)×3=–3 (–1)×2= –2

(–1)×1= –1 (–1)×0=0

(–1)×(–1)=1

Thus, we can conclude that this pattern shows the product of one negative integer and one positive integer is negative integer whereas the product of two negative integers is a positive integer.

Question 5.Find the product, using suitable properties:

Answer:

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

$\Rightarrow (-48) \times [26 + (-36)]$ [Distributive property]

$\Rightarrow (-48) \times (-10)$

$\Rightarrow 480$

(b) $8 \times 53 \times (-125)$

$\Rightarrow 53 \times [8 \times (-125)]$ [Commutative property]

$\Rightarrow 53 \times (-1000)$

$\Rightarrow -53000$

(c) $15 \times (-25) \times (-4) \times (-10)$

$\Rightarrow 15 \times [(-25) \times (-4) \times (-10)]$ [Commutative property]

$\Rightarrow 15 \times (-1000)$

$\Rightarrow -15000$

(d) $(-41) \times (102)$

$\Rightarrow -41 \times [100 + 2]$ [Distributive property]

$\Rightarrow [(-41) \times 100] + [(-41) \times 2] \Rightarrow -4100 + (-82)$

$\Rightarrow -4182$

(e) $625 \times (-35) + (-625) \times 65$

$\Rightarrow 625 \times [(-35) + (-65)]$ [Distributive property]

$\Rightarrow 625 \times (-100)$

$\Rightarrow -62500$

(f) $7 \times (50-2)$

$\Rightarrow 7 \times 50-7 \times 2$ [Distributive property]

$\Rightarrow 350-14 = 336$

(g)$(-17) \times (-29) \Rightarrow$

$(-17) \times [(-30) + 1]$ [Distributive property]

$\Rightarrow (-17) \times (30) + (-17) \times 1 \Rightarrow 510 + (-17)$

$\Rightarrow$ 493

(h)$(-57) \times (-19) + 57$

$\Rightarrow (-57) \times (-19) + 57 \times 1$

$\Rightarrow$ 57 x 19 + 57 x 1

$\Rightarrow$ 57 x (19 + 1) [Distributive property]

$\Rightarrow$ 57 x 20 = 1140

Question 6.A certain freezing process requires that room temperature be low^ered from 40oC at the rate of 5oC every hour. What will be the room temperature 10 hours after the process begins?
Answer:
Given: Present room temperature = 40oC

Decreasing the temperature every hour = 5oC

Room temperature after 10 hours = 40oC + 10 x (–5oC)

= 40oC – 50oC

= – 10oC

Thus, the room temperature after 10 hours is – 10oC after the process begins.

Question 7.In a class test containing 10 questions, 5 marks are awarded for e^very correct answer and (–2)(–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?

Answer:
(i) Mohan gets marks for four correct questions = 4 x 5 = 20

He gets marks for six incorrect questions = 6 x (–2) = –12

Therefore, total scores of Mohan = (4 x 5) + [6 x (–2)]

= 20 – 12 = 8

Thus, Mohan gets 8 marks in a class test.

(ii) Reshma gets marks for five correct questions = 5 x 5 = 25

She gets marks for five incorrect questions = 5 x (–2) = –10

Therefore, total score of Resham = 25 + (–10) = 15

Thus, Reshma gets 15 marks in a class test.

(iii) Heena gets marks for two correct questions = 2 x 5 = 10

She gets marks for five incorrect questions = 5 x (–2) = –10

Therefore, total score of Resham = 10 + (–10) = 0

Thus, Reshma gets 0 marks in a class test.

Question 8.A cement company earns a profit of Rs. 8 per bag of white cement sold and a loss of Rs. 5 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?

(b)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.

Answer:
Given: Profit of 1 bag of white cement = Rs. 8

And Loss of 1 bag of grey cement = Rs. 5

(a) Profit on selling 3000 bags of white cement = 3000 x 8 = Rs. 24,000

Loss of selling 5000 bags of grey cement = 5000 x Rs. 5 = Rs. 25,000

Since Profit < Loss

Therefore, his total loss on selling the grey cement bags = Loss – Profit

= 25,000 – 24,000

= Rs. 1,000

Thus, he has lost of Rs. 1,000 on selling the grey cement bags.

(b)Let the number of bags of white cement be x.
According to question, Loss = Profit

∴∴ 5 x 6,400 = xx x 8
⇒⇒ x=5×64008x=5×64008 = 5000 bags
Thus, he must sell 4000 white cement bags to have neither profit nor loss.

Question 9.Replace the blank with an integer to make it a true statement:
Answer:

(a) $(-3) \times \underline{(-9)} = 27$

(b) $5 \times \underline{(-7)} = -35$

(c) $\underline{7} \times (-8) = -56$

(d) $\underline{(-11)} \times (-12) = 132$

EXERCISE-1.4

Question 1.Evaluate each of the following

Answer:

(a) $(-30) \div 10 = (-30) \times \frac{1}{10} = \frac{-30 \times 1}{10} = -3$

(b) $50 \div (-5) = 50 \times \left(\frac{-1}{5}\right) = \frac{50 \times (-1)}{5} = -10$

(c) $(-36) \div (-9) = (-36) \times \left(\frac{-1}{9}\right) = \frac{(-36) \times (-1)}{9} = \frac{36}{9} = 4$

(d) $(-49) \div 49 = (-49) \times \frac{1}{49} = \frac{-49}{49} = -1$

(e) $13 \div [(-2) + 1] = 13 \div (-1) = 13 \times \left(\frac{-1}{1}\right) = -13$

(f) $0 \div (-12) = 0 \times \left(\frac{-1}{12}\right) = \frac{0}{12} = 0$

(g) $(-31) \div [(-30) \div (-1)] = (-31) \div (-30 - 1) = (-31) \div (-31) = (-31) \times \left(\frac{-1}{31}\right) = \frac{31}{31} = 1$

(h) $[(-36) \div 12] \div 3 = \left[(-36) \times \frac{1}{12}\right] \times \frac{1}{3} = \left(\frac{-36}{12}\right) \times \frac{1}{3} = (-3) \times \frac{1}{3} = \frac{-3}{3} = -1$

(i) $[(-6) + 5] \div [(-2) + 1] = (-6 + 5) \div (-2 + 1) = (-1) \div (-1) = (-1) \times \frac{(-1)}{1} = 1$

Question 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) $a = (-10), b = 1, c = 1$

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

$a = 12, b = -4, c = 2$

Putting the given values in L.H.S. = $12 \div (-4 + 2)$

= $12 \div (-2) = 12 \div \left(\frac{-1}{2}\right) = \frac{-12}{2} = -6$

Putting the given values in R.H.S. = $[12 \div (-4)] + (12 \div 2)$

= $\left(12 \times \frac{-1}{4}\right) + 6 = -3 + 6 = 3$

Since, L.H.S. $\neq$ R.H.S.

Hence verified.

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

$a = 12, b = -4, c = 2$

Putting the given values in L.H.S. = $12 \div (-4 + 2)$

= $12 \div (-2) = 12 \div \left(\frac{-1}{2}\right) = \frac{-12}{2} = -6$

Putting the given values in R.H.S. = $[12 \div (-4)] + (12 \div 2)$

= $\left(12 \times \frac{-1}{4}\right) + 6 = -3 + 6 = 3$

Since, L.H.S. $\neq$ R.H.S.

Hence verified.

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

$a = -10, b = 1, c = 1$

Putting the given values in L.H.S. = $-10 \div (1 + 1)$

= $-10 \div (2) = -5$

Putting the given values in R.H.S. = $[-10 \div 1] + (-10 \div 1)$

= $-10 - 10 = -20$

Since, L.H.S. $\neq$ R.H.S.

Hence verified.

Question 3.Fill in the blanks:

Answer:

(a) $369 \div \underline{1} = 369$

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

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

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

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

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

(g) $20 \div \underline{(-10)} = -2$

(h) $\underline{(-12)} \div (4) = -3$

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

Answer:

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

(ii) $9 \div (-3) = -3$

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

(iv) $(-9) \div 3 = -3$

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

Question 5.The temperature at noon was 10oC above zero. If it decreases at the rate of 2oC per hour until mid-night, at what time would the temperature be 8oC below zero? What would be the temperature at mid-night?
Answer:
Following number line is representing the temperature:

The temperature decreases 2oC = 1 hour

The temperature decreases 1oC = 1/2 hour
The temperature decreases 18oC = 1/2×18 = 9 hours
Total time = 12 noon + 9 hours = 21 hours = 9 pm

Thus, at 9 pm the temperature would be 8oC below 0oC.

Question 6.In a class test (+3) marks are given for every correct answer and (–2)(–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)(–5) marks in this test, though she has got 7 correct answers. How many questions has she attempted incorrectlt?
Answer:
(i) Marks given for one correct answer = 3

Marks given for 12 correct answers = 3 x 12 = 36

Radhika scored 20 marks.

Therefore, Marks obtained for incorrect answers = 20 – 36 = –16

Now, marks given for one incorrect answer = –2

Therefore, number of incorrect answers = (–16)÷(–2)=8(–16)÷(–2)=8
Thus, Radhika has attempted 8 incorrect questions.

(ii) Marks given for seven correct answers = 3 x 7 = 21

Mohini scores = –5

Marks obtained for incorrect answers = = –5 – 21 = –26

Now, marks given for one incorrect answer = –2

Therefore, number of incorrect answers = (–26)÷(–2)=13(–26)÷(–2)=13
Thus, Mohini has attempted 13 incorrect questions.

Question 7.An elevator descends into a mine shaft at the rate of 6 m/min. If the descent starts from 10 above the ground level, how long will it take to reach –350–350 **m?**
Answer:
Starting position of mine shaft is 10 m above the ground but it moves in opposite direction so it travels the distance (–350) m below the ground.

So total distance covered by mine shaft = 10 m – (–350) m = 10 + 350 = 360 m

Now, time taken to cover a distance of 6 m by it = 1 minute

So, time taken to cover a distance of 1 m by it = 1616 minute
Therefore, time taken to cover a distance of 360 m = 16×36016×360 = 60 minutes = 1 hour (Since 60 minutes = 1 hour)

Thus, in one hour the mine shaft reaches –350 below the ground.