Name : _____

Grade : VII

Subject : Mathematics

Chapter: 1. INTEGERS

Know the Terms

- **Natural Numbers:** The counting numbers 1,2,3,4..... are called natural numbers
- **Whole Numbers :** The collection of '0' and all natural numbers are collect whole numbers
- **Integers :** The collection of numbers, which contain whole numbers and negative numbers e.g.-5, -2, 0, 1, 3, 5, etc.
- **Number line :** On a number line, when we

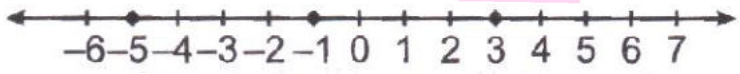
  (a) Add a positive integer, we move to the right

  (b) Add a negative integer, we move to the left.

  (c) Subtract a positive integer, we move to the left

  (d) Subtract a negative integers, we move to the right

  Some integers are marked on the number line as shown below



The ascending order of these numbers is -5, -1, 3.

Integers of Number line :

Objective Type Questions

I. Multiple choice questions

1. Which of the following is the additive inverse of -27?

a) -27 b) 27 c) 0 d) 1

2. Which of the following is the value of the value of -12 x (-2) x (-5)

a) -120 b) 120 c) 0 d) 1

3. Which of the following is the value of (-4) x [(-5) + (-3)

a) -32 b) 120 c) 32 d) -23

4.A shop keepers makes a profit of Rs.5 on each pen and incurs a loss of Rs.2 on each Pencil box. What will be his net profit if he sells ten pens and ten pencil boxes?

a) 20 b) 30 c) 50 d) 100

5.Which of the following is the simplest form of [-5) + (-7)/ (-2) + (-1)]?

a) -12 b) 12 c) 50 d) -4

6. [(-10) x (+9)] + (-10) is equal to :

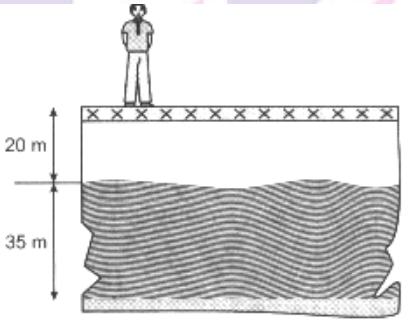
a) 100 b) -100 c) 80 d) -80

7. -16÷ [8 ÷ (-2) is equal to

a) -1 b) 1 c) 4 d) -4

8. Madhre is standing in the Middle of a bridge which is 20 m above the water level of a river. If a 35 m deep river is flowing under the bridge, then the vertical distance between the foot of Madhre and bottom level of the river is :

a) 55 m b) 35 m c) 20 m d) 15 m



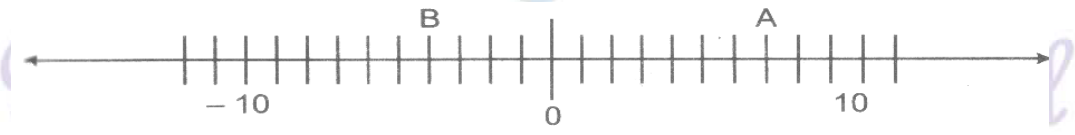
9.Next three consecutive numbers in the pattern 11, 8,5,2,--,--,-- are :

a) 0, - 3, -6 b) -1, -5, -8 c) -2, -5 , -8 d) -1, -4 , -7

10. When the integers 10,0,5,-5, -7 are arranged in descending or ascending order, then find out which of the following integers always remains in the middle of the arrangement :

a) 0 b) 5 c) -7 d) -5

11. By observing the number line state which of the following statements is not true :



a) B is greater than -10 b) A is greater than 0

c) B is greater than A d) B is smaller than 0

12. By observing the above number line (Q-11) state which of the following statements is true

a) B is 2 b) A is -4

c) B is greater than A d) B is -4

13. (-11) x 7 is not equal to :

a) 11 x (-7) b) –(11 x 7) c) (-11) x (-7) d) 7 x (-11)

14. (-10) x (-5) + (-7) is equal to :

a) -57 b) 57 c) -43 d) 43

15. Which of the following is not the additive inverse of a ?

a) – (-a) b) a x (-1) c) –a d) a ÷ (-1)

16.The next number in the patters -62, -37,-12,.....is

a) 25 b) 13 c) 0 d) -13

17. Which of the following statements is not true?

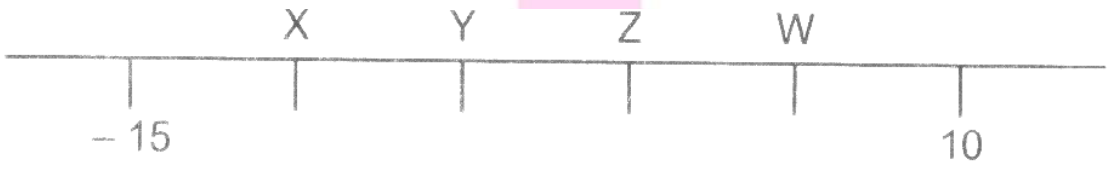
a) When two positive integers are added, we always get a positive integer

b) When two negative integers are added we always get a negative integer

c) When a positive integer and a negative integer is added we always get a negative integer.

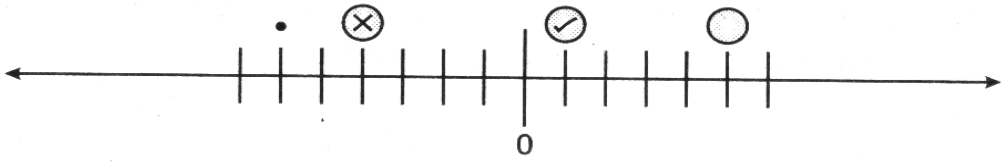
d) Additive inverse of an integer 2 is (-2) and additive inverse of (-2) is 2

18. On the following number line vale 'Zero' is shown by the point



a) X b) Y c) Z d) W

19. If ⊗, ○ ⊘ and ● represent some integers on number line, then descending order of these numbers is



(a) ●,⊗, ⊘, O, (b) ⊗, ●, ⊘, O,

(c) O, ⊘, ⊗, ● (d) O, ●,⊗, ⊘,

20. On the number line, the value of (-3) x (3) lies on right hand side of :

a) -10 b)-4 c) 0 d) 9

21. The value of 5 ÷ (-1) does not lie between.

a) 0 and -10 b) 0 and 10 c) -4 and -15 d) -6 and 6

22. Which of the following is the multiplicative identity for an integer a?

a) a b) 1 c) 0 d) -1

23 [(-8) x (-3)] x (-4) is not equal to :

a) (-8) x[(-3) x (-4)] b) [(-8) x (-4)] x (-3)

c) [(-3) x (-8)] x (-4) d) (-8) x (-3) - (-8) x (-4)

24. -35 x 107 is not same as :

a) -35 x (100 + 7) b) (-35) x 7 + (-35) x 100

c) -35 x 7 + 1000 d) (-30 -5) x 107

25. (-43) x (-99) + 43 is equal to :

a) 4300 b) -4300 c) 4257 d) -4214

26. (-16) ÷ 4 is not same as :

a) (-4) ÷ 16 b) –(16 ÷ 4) c) 16÷(-4) d) (-12) ÷ 5

27. Which of the following does not represent an integer?

a) 0÷(-7) b) 20 ÷ (–4) c) (-9) ÷ 3 d) -4

28. Which of the following is different from the others?

a) 20 + (-25) b) (-37) –(-32) c) (-5) x (-1) d) (45) ÷ –9

29. Which of the following shows the maximum rise in temperature?

a) 23 ° to 32 ° b) -10 ° to + 1 ° c) -18 ° to -11 ° d) -5 ° to 5 °

30. If a and b are two integers , then which of the following may not be an integer?

a) a + b b) a – b c) a x b d) a ÷ b

31.For a non-zero integer a which of the following is not defined?

a) a ÷ 0 b) 0 ÷ a c) a ÷ 1 d) 1 ÷ a

1. b	2. a	3. c	4. b	5. c	6. b	7. c	8. a	9.d	10. a
11. c	12. d	13. c	14. d	15. a	16. b	17. c	18. c	19.c	20. a
21. b	22. b	23. d	25. c	26. a	27. a	28. d	29. c	30. b	31. d

II. Multiple choice questions

1. When zero is subtracted from an integer, we get (All in one)

a) 1 b) 0

c) the inverse of the number d) the same number

2. The value of (-2) x (-1) x (1) is

a) 1 b)3 c) -4 d) 2

3. The value of [(-6) +2] ÷(2) is

a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{1}{4}$ d) -2

4. The value of (-10) x (-5) +(-7) is

a) 40 b) -43 c) 43 d) 23

5.(-25) (6 +4) is not same as

a) (-25) x 10 b) (-25) x 6 +(-25) x 4

c) (-25) x 6 x 4 d) -250

6. Which of the following does not represent an integer?

a) 0 ÷ (-7) b) 20 ÷ (-4) c) (-9) ÷3 d) (9 - 12) ÷ 5

7. Which of the following is different from the others?

a) 20 +(-25) b) (-37) –(-32) c) (-5) × (-1) d) (45) +(-9)

1. d	2. d	3. d	4. c	5.c	6. d	7. c

III. Multiple choice questions

1. When we add a positive integer and a negative integer, the result

(a) is always positive (b) is always negative

(c) is zero (d) can be positive or negative

2. (-11) × 7 is not equal to

a) 11 × (-7) b) –(11 × 7) c) (-11) × (-7) d) 7 × (-11)

3. Which of the following is not additive inverse of a?

a) –(-a) b) 1 c) 0 d) -1

4. Which of the following is the multiplicative identity for an integer a?

a) a b) 1 c) 0 d) -1

5. Which of the following does not represent an integer ?

a) 0 ÷ (-7) b) 20 ÷ (–4) c) (-9) ÷ 3 d) (-12) ÷ 5

1. d	2.c	3. a	4. b	5. d

IV. Multiple choice questions

1. On a number line, when we add a positive integer, we

a) move to the right b) move to the left

c) do not move at all d) none of these

2. On a number line, when we add a negative integer. We

a) move to the right b) move to the left

c) do not move at all d) none of these

3. On a number line, when we subtract a positive integer, we

a) move to the right b) move to the left

c) do not move at all d) none of these

4. On a number line, when we subtract a negative integer, we

a) move to the right b) move to the left

c) do not move at all d) none of these

5. When we two positive integers are added. We get

a) a positive integer b) a negative integer

c) sometimes a positive integer, sometimes a negative integer d) none of these

6. When we two negative integers are added. We get

a) a positive integer b) a negative integer

c) sometimes a positive integer, sometimes a negative integer d) none of these

7. Which of the following statements is wrong?

a) When a positive integer and a negative integer are added, we always get a negative integer

b) Additive inverse of 8 is (-8) c) Additive inverse of (-8) is 8

d) For subtraction, we add the additive inverse of the integer that is being subtracted, to the other integer.

8. Which of the following is true?

a) $(-8)+(-4) > (-8)-(-4)$ b) $(-8)+(-4) < (-8)-(-4)$

c) $(-8)+(-4) = (-8)-(-4)$ d) none of these

9.The product of three negative integers is

a) a Positive integer b) a negative integer

c) either a positive integer or a negative integer d) none of these

10. The product of three negative integers is

a) a Positive integer b) a negative integer

c) either a positive integer or a negative integer d) none of these

11. $(-1) \times (-1) \times (-1) \times$ ..... 10 times is equal to

a) 1 b) -1 c) 1 or -1 d) none of these

12. . $(-1) \times (-1) \times (-1) \times$ ..... 5 times is equal to

a) 1 b) -1 c) 1 or -1 d) none of these

13. . $(-1) \times (-1) \times (-1) \times$ ..... 2 m times where m is a natural, is equal to

a) 1 b) -1 c) 1 or -1 d) none of these

14. . $(-1) \times (-1) \times (-1) \times$ ..... $(2m+1)$ times where m is natural number, is equal to

a) 1 b) -1 c) 1 or -1 d) none of these

15. $(-20) \times (-5)$ is equal to

a) 100 b) -100 c) 20 d) 5.

16.$(-30) \times 20$ is equal to

a) 600 b) -600 c) 50 d) 10

17. $10 \times (-20)$ is equal to

a) 200 b) -200 c) 30 d) 10

18. 3×0 is equal to

a) 0 b) 3 c) 1 d) -3

19. $0 \times (-5)$ is equal to

a) 0 b) 5 c) -5 d) 1

20. $(-2) \times 1$ is equal to

a) 2 b)-2 c) 1 d) -1

21. 1×6 is equal to

a) 6 b) -6 c) 1 d) -1

22. $4 \times (-1)$ is equal to

a) 4 b)-4 c) 1 d) -1

23. $(-10) \times 0 \times (-15)$ is equal to

a) 0 b) 10 c) 15 d) 150

24. The integer whose product with (-1) is 0, is

a) 1 b) -1 c) 0 d)none of these

25. The integer whose product with (-1) is 1 is

a) -1 b) 1 c) 0 d)none of these

26. $10 \div (-5)$ is equal to

a) 1 b) 2 C) -2 d) 5

27. $(-6) \div (-3)$ is equal to

a) 5 b) 2 c) 3 d) 6

28. $(-5) \div 1$ is equal to

a) 5 b) -5 c) 1 d) -1

29. $(-9) \div (-1)$ is equal to

a) 1 b) 9 c) -1 d) -9

30. If $16 \div x = 16$, then is equal to

a) 1 b) 2 c) 4 d) 16

31. If $(-50) \div x = 1$ then x is equal to

a) 1 2) 50 3) -50 d) 10

32) If $x \div 1 = 8$, then x is equal to

a) 8 b) 50 c) -50 d) 10

33. The additive identity for integers is

a) 1 b) -1 c) 0 d) None of these

34. The multiplicative identity for integers is

a) 1 b) -1 C)0 d) None of these

35. $a \times (b + c) = a \times b + a \times c$ is called

a) Commutative property b) Associative property

c) distributive property d) closure property

36. Manish deposits Rs.2000 in his bank account and withdraws Rs.1000 from it the next day. Find the balance in Manish's account after the withdrawal.

a) Rs.2000 b) Rs.3000 c) Rs.1000 d) none of these

Hints / Solutions

I. Fill in the Blanks

In questions 1 to 40 fill in the blanks to make the statements true.

1. (-a) + b = b + additive inverse .....

2. ..... ÷ (−10) = 0

3. (-157) x (-19) + 157 = ...

4. -8 + ...= - 3

5. If x, y and z are integers then(x+.....) + ... + (y + ...)

6.(-42) + ... = - 43

7. (-8) + (-8) + (-8) = ... x (-8)

8. 11 x (-5) = - (..... x .....) = ...

9. (-9_)x 20 = ...

10. (-23) x (42) = (-42) x .....

11.While multiplying a positive integer and negative integer, we multiply them as .....numbers and put a .....sign before the product.

12. If we multiply ..... number of negative integers then the resulting integer is positive

13. If we multiply six negative integers and six positive integers, then the resulting integer is .....

14. If we multiply five positive integers and one negative integer, then the resulting integer is .....

15. ..... is the multiplicative identify for integers.

16. We get additive inverse of an integer a when we multiply it by .....

17. (-25) x (-2) = ...

18. (-5) x (-6) x (-7) = ...

19. 3 x (-1) x (-15) = ...

20. [12 x (-7)] x 5 = ... x [(-7) x .....]

21. 23 x (-99) = ... x (-100 + ...)

22. .....x (-1) = -35

23..... x (-1) = 47

24. 88 x .....= - 88

25. ..... x (-93) = 93

26. (-40) x .....= 80

27. ..... x (-23) = - 920

28. When we divide a negative integer by a positive integer, we divide them as a whole number and put a .....sign before quotient.

29. When -16 is divided by ..... the quotient is 4

30. Division is the inverse operation of .....

31. 65 ÷ (-13) = ...

32. (-100) ÷ (-10) = ...

33. (-225) ÷ 5 = ...

34. ..... ÷ (-1) = -83

35. ..... ÷ (-1) =75

36. 51 ÷ ..... = -51

37. 113 ÷ ..... = -1

38. (-95) ÷ .....=95

39.(-69) ÷ (69) = ...

40. (-28) ÷ (-28) = ...

1. a	2. 0	3. 3140	4. 5	5. y,x,z	6. 0	7. 3	8. 11 x5, -55	9. -180
10. 23	11. Positive, negative	12. even	13. Positive	14. Negative	15. 1	16. -1	17. 50	18. -210
19 .45	20. 12, 5	21. -23, 1	22. 35	23. -47	24. -1	25. -1	26. -2	
27. 40	28. Negative	29. -4	30. Multiplication	31. -5	32. 10	33. -45	34. 83	35. -75
36.-1	37. -113	38. -1	39. -1	40. 1				

II. Fill in the Blanks

1. $(-21) + (-19) =$ .....

2. $12 \times (-5) = -$ (..... x .....) = ...

3 .$-14 \times 4 = -$ (..... x .....) = ...

4. $-23 \times 42 = (-42) \times$ .....

5. $(-43) +$ ..... $= -43$

6. $(-9) \times 20 =$ .....

7. $(-6) + (-6) + (-6) =$ ..... x (-6)

1.Given, $(-21) + (-19) = (-21) + (-19) = -40$

2.Given, $12 \times (-5) = -(12 \times 5) = -60 = (12 \times 5) = -60$

3. Given, $-23 \times 42 = (-42) \times$ LHS $= -23 \times 42 = (-42) \times 23$

5. Given $(-43) +$ .....$= -43 \Rightarrow (-43) + 0 = -43$

6. Given $[(-9) \times 20] =$ .....$(9 \times 20) = -180$

7. Given $(-6) + (-6) + (-6) =$.....$\times (-6)$ So, $(-6) + (-6) = -12 \times (-6)$

I. True (or) False

In each of the questions 1 to 37state whether the statement is True or False (NCERT Exemplar)

1. $5 - (-8)$ is same as $5 + 8$

2. $(-9) + (-11)$ is greater than $(-9) - (-11)$

3. Sum of two negative integers always gives a number smaller than both the integers.

4. Difference of two negative integers cannot be a positive integers

5. We can write a pair of integers whose sum is not an integer.

6. Integers are closed under subtraction

7. $(-23) + 47$ is same as $47 + (-23)$

8. When we change the order of integers . their sum remains the same.

9. When we change the order of integers their difference remains the same

10. Going 500 m towards east first and then 200 m back is same as going 200 m towards west first and then going 500 m back

11. $(-5) \times (33) = 5 \times (-33)$

12. $(-19) \times (-11) = 19 \times 11$

13. $(-20) \times (5-3) = (-20) \times (-2)$

14. $4 \times (-5) = (-10) \times (-2)$

15. $(-1) \times (-2) \times (-3) = 1 = 1 \times 2 \times 3$

16. $-3 \times 3 = -12 - (-3)$

17. Product of two negative integers is a negative integer

18. Product of three negative integers is a negative integer.

19. Product of a negative integer and a positive integer is a positive integer

20. When we multiply two integers their product is always greater than both the integers.

21. Integers are closed under multiplication

22. $(-237) \times 0$ is same as $0 \times (-39)$

23. Multiplication is not commutative for integers.

24. (-1) is not a multiplicative identity of integers.

25. 99×101 can be written as $(100-1) \times (100+1)$

26. If a, b, c are integers and $b \neq 0$, then $a \times (b - c) = a \times b - a \times c$

27. $(a + b) \times c = a \times c + a \times b$

28. $a \times b = b \times a$

29. $a \div b = b \div a$

30. $a - b = b - a$

31. $a \div (-b) = -(a \div b)$

32. $a \div (-1) = -a$

33. Multiplication fact $(-8) \times (-10) = 80$ is same as division fact $80 \div (-8) = (-10)$

34. Integers are closed under division

35. $[(-32) \div 8] \div 2 = -32 \div [8 \div 2]$

36. The sum of an integer and its additive inverse is zero (0)

37. The successor of $0 \times (-25)$ is $1 \times (-25)$

1. True	2. False	3. True	4. False	5. False	6. True	7. True	8. True	9.False	10. True
11. True	12. True	13. False	14. False	15. False	16. True	17. False	18. True	19. False	20.False
21.True	22. True	23. False	24. True	25. True	26. True	27. False	28. True	29.False	30. False
31.True	32. True	33. True	34. False	35. False	36. True	37. False			

II. True (or) False

1. $4 - (-7)$ is same as $4 \div 7$.

2. $(-9) + (-10)$ is greater than $(-9) - (-10)$

3. $(-23) + 47$ is same as $47 + (-23)$

4. $(-5) \times (33)$ is equal to $(-5) \times (-33)$.

5. $(-20) \times (-11)$ is equal to $(20) \times (11)$.

6. $(-20) \times (5-3) = (-20) \times (-2)$.

7. Product of two negative integers is a negative integer.

8. Product of three negative integers is a negative integer.

9. $a + b = b + a$.

10. $(a + b) \times c = a \times c + a \times b$.

1. True i.e. $4 - (-7) = 4 + 7$.

2. False i.e. $(-9) + (-10) = (-9) + 10) = -19$ Whereas $-9 - (-10) = -9 + (10) = 1$.

3. True i.e. $(-23) + 47 = a + b = b + a = 47 + (-23)$.

4. False i.e. $(-5) \times 33 = -5 \times 33 = -165$ Whereas, $(-5) \times (-33) = 5 \times 33 = 165$.

5. True i.e. $(-20) \times (-11) = 20 \times (11) = 220$ Whereas, $(20) \times (11) = 220$.

6. False, i.e. $(-20) \times (5 - 3) = (-20) \times (2) = -40$ Where, $(-20) \times (-2) = (20 \times 2) = 40$.

7. False e.g. $(-2) \times (-2) = 4$ i.e. product of two negative integers is a positive integer

8. True e.g. $(-4) \times (-4) \times (-4) = -64$.

   i.e. product of three negative integers is a negative integer.

9. False, i.e. $a \div b \neq b \div a$ e.g. $2 \div 4 = \frac{1}{2}$ $a \div b$

   But, $b \div a = 4 \div 2 = 2 \Longrightarrow . a \div b \neq b \div a$.

10. False, i.e. $(a + b) \times c \neq a \times c + a \times b$ e.g. $(1 + 2) \times 3 = 3 \times 3 = 9$.

    But $(a \times c) + a \times b = (1 \times 3) + 1 \times 2 = 3 + 2 = 5$.

I. Match the Following

Column A	Column B
i) (-2) × (-2)	a) -80
ii) (-40) + (-40)	b) 4
iii) (60) ÷ 1	c) -9
iv) (-9) × (1)	d) 60

Column A	Column B
i) (-4) × (-1) × (-1)	a) 2
ii) (2 + 4) × 4	b) 24
iii) (4 + 2) × 1	c) -4
iv) The value of [(12 + 6) + (4 + 4) × 2] is	d) 34

i) b	ii) a	iii) d	iv) c
i) c	ii) b	iii) a	iv) c

I. Very Short Answer Questions

1. What is the additive inverse of - 14?

+ 14

2. When 100 is divided by (1), then what us the quotient?

- 100

3. What is the quotient, when an integer is divided by 1

The integer itself

4. What is the product of an integer and 0 ?

Zero

5. What is the additive identify for integers?

Zero

6. What is the successor of - 1

Zero

7. What is the quotient when zero is divided by a non-zero integer?

Zero

II. Very Short Answer Questions

1. Find the value of the following addition

   a) 12 + 10 b) 8 + 16

2. Find the value of the following subtraction

   a) (-40) + (10) b) (-15) + (-15)

3. Find the value of the following subtraction.

   a) 7 – 9 b) 17 –(-21) c) (-8) – (-14)

4. Find the value of the following multiplication .

   a)3 × (-4) b) (-2) × (-3) c) (-3) × 2

5. Find the next integers.

   a) 2 , 4 , 6 b) 3 , 7

6. Find the value of the following divisions.

   a) (-20) ÷ 5 b) 15 ÷ 5 c) (-12) + (-6)

7. Write the integers. Whose product with (-1) is 0

8. Write the integer, whose product with (-1) is 1

9. Find the value of a, If $4 \times x + 4 = 8$

10. Find the value of a, If 16 ÷ x = 32 – 16

11. Write a pair of integers. Whose sum, gives an integer smaller than both the integers.

12. Write a pair of integers. Whose sum, gives an integer smaller than only one of the integers.

13. Write a pair of integers. Whose sum gives an integer greater than both the integers.

1. a) $12 + 10 = 22$ b) $8 + 16 = 24$

2. a) $(-40) + (10) = -30$ b) $(-15) + (-15) = -30$

3. a) $7-9 = 7 + (-9) = -2$ b) $17-(-21) = 17 + (21) = 38$

   c) $(-8) - (-14) = -8+(14) = 6$.

4. a) $3 \times (-4) = -(3 \times 4)$ [$\because a \times (-b) = -(a \times b)$] $= -12$

   b) $(-2) \times (-3) = 2 \times 3$ [$\because (-a) \times (-b) = (a \times b)$] $= 6$

   c) $(-3) \times 2 = -(3 \times 2)$ [$\because (-a) \times b = -(a \times b)$] $= -6$

5. a) Given, 2,4,6 $2+2=4, 4+2=6, 6+2=8$. So the next integer is 8,

b) Given 3, 7 $3+4=7, 7+4=11$

So, the next integer is 11

6. (a) $(-20) \div 5 = -(20+5) = -4$ b) $15 + (-5) = -(15+5) = -3$

c) $(-12)+(-6) = 12+6 = 2$

7. 0, Multiplied by any integer gives always 0

e.g. (i) $(-7) \times 0 = 0$ (ii) $5 \times 0 = 0$

8. If (-1) is multiplied by (-1), then it gives always 1 i.e.$(-1) \times (-1) = 1$

$[\because (-a) \times (-b) = (a \times b)]$

9. Given, $4 \times x + 4 = 8$

$\Rightarrow \quad 4 \times 8 - 4 \Rightarrow 4x \times 4 \Rightarrow \times = \frac{4}{4} = 1$

10. Given, $16 \div \times = 32 - 16$

$\Rightarrow 16 \div \times = 32 + (-16)$

$\Rightarrow 16 \div \times = 16 \Rightarrow \times = \frac{16}{16} = 1$

11. If both the integers are negative, then their sum gives an integer smaller than both integers. e.g. $(-6) + (-7) = -13$

12. For a pair of integers whose sum smaller than only one of the integer,

First integer $= -4$ and second integer $= 9$

$\because \quad -4 + 9 = 5$

13. For a pair of integer greater than both the integers we take both integers positive

First Integer $= 4$

Second Integer $= 6$

Sum of these integers $= 4 + 6 = 10$

Hence, 10 is greater than 4 and 6.

III. Very Short Answer Questions

1. When integers 10 , 0 , 5, -5 -7 are arranged in descending or ascending order, then which of the given integers always remain in the middle of the arrangement?[NCERT Exemplar]

0

2. Write a positive integer and a negative integer whose sum is a a negative integer whose sum is a negative integer

Positive integer = 4, Negative Integer = -6

i.e.,4 + (- 6) = -2

3. Write a positive inter and a negative integer whose difference is a positive integer

Positive integer = 4, Negative Integer = -3

i.e.,4 - (- 3) = 7

4. Write two negative integers whose difference is 7.

Negative integers can be – 2 and -9

5. Write two integers whose product is greater than both the integers

Integer could be 4 and 5

i.e., 4 × 5 = 20

6. Write two integers such that one is smaller than - 11 ad other is greater than – 11 but their difference is - 11.

Integers would be – 9 and -20

7. What will be the product of three negative integers?

Negative integer

8. what is the greatest Negative integer.

-1

9. What's the Error? Ramu evaluated the expression - 7 – (- 3) and came up with the answer – 10 What did Ramu do wrong?

Ramu went wrong in solving –(-3) and took it as + 6

10. What's the error ? Reeta evaluated – 4 + d for d = - 6 and gave an answer of 2 . What might Reeta have done wrong?

Reeta went wrong in solving + (-6) and took it as + 6.

I Short Answer Questions

1. Write a pair of integers whose difference is (- 10)

The first integer = 50

The second integer = 60

(50 – 60) = - 10

2. Write a pair of integers whose sum is 0.

(-10, 10), (10, -10) , (2, -2) , (-2, 2)

The first integer = -10

The second integer = 10

(-10 + 10) = 0

3. If the total of two integers is (- 53) and one of them is 9 find other integer.

Let other integer be x, then according to the question

9 + X = -53

X = - 53 – 9

X = - 62

4. Write a pair of integers whose sum is (- 7)

We can have (-2) + (-5) = -7

Or, -2 and -5 may be the required pair

5. Evaluate the following :

a) (-30) ÷ 10 b) (-36) ÷ (-9)

a) (-30) ÷ 10 = - 3 b) (-36) ÷ (-9) = 4

6. Result of the following is an integer or not :

a) (-8) ÷ (-2) b) 3 ÷ (–8)

a) (-8) ÷ (-2) = 4 (integer)

b) 3 ÷ (–8) = $\frac{3}{-8}$ which is not an integer

7. Evaluate :

a) 13 ÷ [(-2) + 1] b) 0 ÷ (-12)

a) 13 ÷ [(–2) + 1] = 13 ÷ [–2 + 1] = 13 ÷ (1) = -13

b) 0 ÷ (–12) = 0.

8. Find the values of a and b following algebraic expressions:

a) 1 + a = 3 b) b – 2 = 1

a) Since, 1 + a = 3

$\Rightarrow$ a = 3 -1

$\Rightarrow$ a = 2

b) Since, b-2 = 1

$\Rightarrow$ b = 1 + 2

$\Rightarrow b = 3$

9. Find the product :

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

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

If odd number of (-ve) integers are multiplied, then the sign of product will be negative

Since 5 is odd number. So, result = -1

10. Write the multiplicative identity for integers is 1.

As $1.a = a = a.1$

11. Find each of the following products :

a) $9 \times (-3) \times (-6)$ b) $(-12) \times (-13) \times (-5)$

a) We have

$9 \times (-3) \times (-6) = \{9 \times (-3)\} \times (-6)$

$= -(9 \times 3) \times (6)$

$= 27 \times (-6) = 27 \times 6 = 162$

b) we have

$(-12) \times (-13) \times (-5)$

$= \{(-12) \times (-13)\} \times (-5)$

$= 156 \times (-5)$

$= -(156 \times 5) = -780$

12. Evaluate each of the following products.

a) $(-1) \times (-2) \times (-3) \times (-4) \times (-5)$ b) $(-3) \times (-6) \times (-9) \times (-12)$

a) since the number of negative integers in the product is odd Therefore their Product is odd. Therefore their product is negative Thus we have

$(-1) \times (-2) \times (-3) \times (-4) \times (-5)$

$= -(1 \times 2 \times 3 \times 4 \times 5)$

$= -(2 \times 3 \times 4 \times 5)$

$= -(6 \times 4 \times 5)$

$= -(24 \times 5) = -120$

b) Since The number of negative integers in the given product is even. Therefore, their product is positive. Thus we have

$(-3) \times (-6) \times (-9) \times (-12)$

$= (3 \times 6 \times 9 \times 12)$

$= (18 \times 9 \times 12)$ $[\because 3 \times 6 = 18]$

$= (162 \times 12)$ $[\because 18 \times 9 = 162]$

$= 1944$

13. Find the value of :

a) $15625 \times (-2) + (-15625) \times 98$ b) $18946 \times 99 - (-18946)$

a) $15625 \times (-2) + (-15625) \times 98$

$= (-15625) \times 2 + (-15625) \times 98$

$= (-15625) \times (2 + 98)$

$= (-15625) \times 100$

$= -(15625 \times 100)$

$= -1562500$

b) $18946 \times 99 - (-18946)$

$= 18946 \times 99 + 18946$

$= 18946 \times 99 + 18946 \times 1$

$[\because 18946 = 18946 \times 1]$

$= 18946 \times (99 \times 1)$

$[\text{Using } a \times b + a \times c = a \times (b + c)]$

$= 18946 \times 100$

$= 1894600.$

14. A green grocer had a profit of Rs.47 on Monday a loss of Rs.12 on Tuesday and loss of Rs8 on Wednesday. Find his net profit or loss in 3 days (NCERT Exemplar)

Profit is taken with positive sign and loss with negative sign

Monday = +Rs.47

Tuesday = - Rs.12

Wednesday = - Rs.8

Net profit or loss = $Rs(47 - 12 - 8)$

$= +Rs.27$

$\therefore$ Net profit of Rs.27 in three days

15. Subtract.

a) 63 from $(-100 + 7)$ b) -222 from $(-100 + 7)$

a) We have to subtract 63 from $(-100 + 7)$

Since $(-100+7) = -93$

$\Rightarrow \quad -93 - 63 = -156$

b) we have $(-666) - (-222) = (-666) + 222$

$= -444$

16. Solve the following : a) 738 + (- 99) + 100 – (- 400) b) 76 × (- 42) + 76 ×50

a) $738 + (-99) + 100 - (-400)$

$= 738 - 99 + 100 + 400$

$= 738 + 1 + 400$

$= 1139$

b) By distributive property

$76 \times (-42) + 76 \times 50 = 76 \times [(-42) + 50)]$

$= 76 \times 8 = 608$

17. Write the additive inverse of the following :

a) -100 b) 72

Since we know that the total of any integer and its additive inverse is zero

a) Additive inverse of $-100 = 100$

as $100 + (-100) = 0$

b) Additive inverse of $72 = -72$

as $72 + (-72) = 0$.

18. Find the value of 44875 × 99 - (- 44875) using the property.

$44875 \times 99 - (-44875) = 44875 \times 99 - 44875 \times -1$

$= 44875 \times [99 - (-1)]$

$= 44875 \times 100$

$= 4487500$.

19. Simplify : 24 - 4 ÷ 2 × 3.

We have

$24 - 4 \div 2 \times 3 = 24 - 2 \times 3$

[Performing division $-4 \div 2 = -2$]

$= 24 - 6 = 18$

[performing multiplication $2 \times 3 = 6$] $= 18$

[Performing subtraction).

20. Simplify : (-20) + (-8) ÷ 9-2) × 3.

We have

$(-20) + (-8) \div (-2) \times 3$

$= (-20) + 4 \times 3$

$= (-20) + 12 = -8$

21. Simplify : (-5) – (-48) ÷ (-16) (-2) × 6.

We have,

$(-5) - (-48) \div (-16) + (-2) \times 6$

$= (-5) - 3 + (-2) \times 6$ [performing division]

$= (-5) - 3 + (-12)$ [Performing multiplication

$= -5 - 3 - 12$

$= 20$ [Performing addition]

22. Divide :

a) -91 by 13 b) -98 by -14

a) we have, $-91 \div 13 = \frac{-91}{13} = -\frac{91}{13} = -7$

b)We have $-98 \div (-14) = \frac{-98}{-14} = -\frac{98}{14} = 7$

23. If Δ is an operation such that for integers a and b we have a Δ b = a × a + b × b –a × b, then find (-3) Δ 2

Sol. $(-3) \Delta 2 = (-3) \times (-3) + 2 \times 2 - (-3) \times 2$

$= 9 + 4 - (-6) = 13 + 6 = 19.$

II Short Answer Questions

1. Find the quotient in each of the following :

a) $(-1728) \div 12$ b) $(-15625) \div (-125) = \frac{-15625}{-125}$ = c) $3000 \div (-100)$

a) We have,

$(-1728) \div 12 = \frac{-1728}{12} = -\frac{1728}{12} = -144$

b) We have $(-15625) \div (-125) = \frac{-15625}{-125} = \frac{15625}{125} = 125$

c) We have $3000 \div (-100) = \frac{30000}{-100} - = \frac{30000}{100} = -30$

2. Verify a-(-b) = a + b for the following values of a and b :

a) a=42, b = 36 b) a = 236, b = 250 c) a= 150, b = 168

a)Given to prove a= 42 b= 36

a-(-b) =a + b

LHS = a –(-b) = 42 – (-36)

= 42 +36 = 78

RHS = (a + b) = (42 + 36) = 78

LHS = RHS Hence proved

b) Given to prove a= 236, b = 250

a-(-b) = (a + b)

LHS = a –(-b) = 236 – (-250)

= 236 + 250 = 486

RHS = (a + b) = (236 + 250) = 486

LHS = RHS Hence proved

c) Given to prove a= 150, b = 168

a-(-b) = (a + b)

LHS = a –(-b) = 150 – (-168)

150 + 168 = 318

RHS = (a + b) = (150 + 168) = 318

LHS = RHS Hence proved .

3. Find the value of : a) [32 + 2 × 17 +(- 6)] ÷ 15 b) $\left||-17|+17\right| \div \left||-25|-42\right|$

a) We have [32 + 2 × 17 + (-6)] ÷ 15

= [32 + 34 +(-6) ÷ 15

=(66 – 6) ÷ 15

= 60 ÷ 15

$= \frac{60}{15} = 4$

b) we have $\left||-17|+17\right| \div \left||-25|-42\right|$

$= |17+17| \div |25-42|$

$= |34| \div |17|$

= 34 ÷ 17

$= \frac{34}{17} = 2.$

4. Simplify : {36 ÷(- 9) } ÷ {(- 24) ÷ 6}

= We have {36 ÷(-9) } ÷ {(-24) ÷ 6}

$= \left\{-\frac{36}{9}\right\} \div \left\{-\frac{24}{6}\right\}$

$=(-4) \div (-4) = \frac{(-4)}{(-4)} = \frac{4}{4} = 1.$

5. Find each of the following products :

a) (-20) × (-a) ×9

b) (-18) × (-5) × (-1) × 7 c) (-5) × (-4) × (-8)

a. (-20) × (-a) × 9 = 20 ×x a ×9 = 180 a

b. (-18) × (-5) × (-1) × 7 = -(18 × 5 × 1× 7) =-630

c) (-5) × (-4) × (-8) = - (5× 4 × 8) = - 160

6. Find the product using suitable properties :

a) 26 × (-48) +(-36) × (-48) b) 15 × (-25) +(-4) × (-25)

c) 7 × (50-2)

a) 26 × (-48) +(-36) × (-48)

=[-(26 × 48)] +(36 × 48)

[∵ a × (-b) = - (a × b)

(-a) × (-b) = (a × b) = -(1248) + 1728 = 480

Or

26 × (-48) +(-36) × (-48) = [26 +(-36)] × (-48) = (-10) × (-48),

[by distributive property] = 480

b) 15 × (-25) +(-4) × (-25) = [15 +(-4)] × (-25)

[by distributive property] = (11) × (-25) = -275

c) 7 × (50 – 2) = 7 × 50 -7 × 2 =350 – 14 = 336

[distributively of multiplication over subtraction].

7. Verify : (- 30) × [13 + (- 3))]

= [(-30) × 13] +[(-30) × (-3)]

LHS = (-30) × (13-3)

= (-30) × (13 +(-3)

= (-30) × 10 = -300

RHS = [(-30) × 13] +|(−30) × (−3) |

=(-390) + 90

$= -300$

$\Rightarrow$ LHS = RHS

8. What is the :

a) sign of the product of 15 negative integers?

b) Product of 108 negative integers and 0?

c) sign of product of 22 negative integers?

a) Since 15 is odd, so the sign of product of 15 negative integers is negative

b) Since product of integer is an integer and product of integer and zero is zero

$\therefore$ Product $= 0$

c) Sign of product of 22 negative integers is positive because 22 is even

9. Find the following :

a) (- 201) ÷ (- 3) b) (- 36) (- 4) c) (- 325) ÷ (- 13).

a) (-201) (-3) $= (-201) \times \frac{1}{-3} = \frac{-201}{(-3)} = 67$

(negative sign will be cancelled)

b) (-36) ÷ (-4) $= (-36) \times \left\{\frac{1}{-4}\right\} = \frac{(-36)}{(-4)}$

$= (\frac{36}{4}) = 9$ (negative sign will be cancelled)

c) (-325) ÷ (-13) = (-325) x $\left(\frac{1}{-3}\right) = \left(\frac{-325}{-13}\right)$

$= \left(\frac{325}{13}\right) = 25$ (negative signs cancelled).

III Short Answer Questions

1. Verify a + (- b) = a- b for the following values of a and b.

a) a = 20, b = 12 b) a = 137 , b = 92

2. Verify –a + (- b) = - (a + b) for the following values of a and b.

a) a=137, b = 49 b) a= 141, b = - 39

3. Write down a pair of integers whose.

a) Sum is - 11 b) difference is - 19

4. Verify a + (b + c) = (a +b) + c for the following values of a, b and c.

a) a= 18, b= 15, c= 13 b) a = - 31, b = 51, c = 89

5. Verify $(a \times b) \times c = a \times (b \times c)$ for the following values of a , b and c.

   a) a = 12, b = 13, c =19 b) a= -11, b = -12, c = -3.

6. Verify that $a \div (b + c) \neq (a \div b) + (a + c)$ for each of the following values of a, b and c. a) a= 24 b = -4 c = 8 b) a= 16, b =4, c= 4.

7. If a child was suffering from high fever since Monday. On Monday evening, his father consulted doctor to take medicine, After taking medicine in three days Childs temperature came down 5^0 F On Wednesday, his body temperature was 96.4^0 F in the morning. Calculate the temperature of body of child on Monday (before consulting to doctor)Depict value of consulting a doctor in sick condition (Value based question).

8. Going 500 m t0wrds East first and ten 200 m back is same as going 200 m toward West first and then going 500 m back (NCERT Exemplar).

9. The table given below shows the elevations relative to sea level of four location. Taking sea level as zero answer the following questions.

Location	Elevation (in m)
A	-180
B	1600
C	-55
D	3200

   a) Which location is closet to sea level

   b) Which location is farthest from sea level?

   c) Arrange the location from the least to the greatest elevation.

10. Sana and Fatima participated in an apple race. The race was conducted in 6parts. In the first part, Sana won by 10 s. In the second part, she lost by 1 min then won by 20 s in the third part and lost by 25 s in the fourth part she lost by 37 s in the fifth part and won by 12 s in the last part. Who won the race finally.

11. In a true –false test containing 50 questions, a student is to be awarded 2 marks for every correct answer and (-2) for every incorrect answer and 0 for not attempting any question. If yash secured 94 marks in a test. What are the possibilities of his marking correct or wrong answer?

12. Multi-storey building has 25 floors above the ground level each of height 5 m. It also has 3 floors in the basement each of height 5 m. A lift in building moves at the rate of 1 m/s. If a man starts from 50 m above the ground, how long will it take him to reach at 2^{nd} floor.

13. Write a negative integer and positive integer whose difference is +2

14. In a quiz, team A of a scored -30, 5, 0 and team B scored 20, 0, -10 in three successive rounds. Which team scored more? Can we say that we can add integer in any order?

15. A certain freezing process requires that room temperature be lowered from 30 ^{0}c at the rate of 5 ^{0} c every hour. What will be the room temperature 12 h after the process begins?

16. In a class test consisting of 20 questions 5 marks are given for every correct answer and (-2) marks are given for every incorrect answer. Ajay attempted all question but only 9 of his answers are correct. Which is his total score?

17. If the product of two integers is -216 and one of them is -6 then what is the other integer?

18. Write a negative integer and a positive integer whose difference is -14.

1. a) Given , $a = 20, b = 12$ Taking LHS $a + (-b) = 20 + (-12) = +8$

   Now taking RHS

   $a - b = 20 - 12 = +8$

   Hence, $a + (-b) = a - b$

   b) Given $a = 137$ $b = 92$

   Taking LHS , $a + (-b) = 137 + (-92) = 45$

   Now, taking RHS

   $a - b = 137 - 92 = 45$

   Hence, $a + (-b) = (a-b)$

2. (a) Given, $a = 137, b = 49$

   Taking LHS $-a + (-b) = (-137) + (-49) = -137 - 49 = -186$

   Now taking RHS $-(a + b) = -(137 + 49) = -186$

   Hence, $-a + (-b) = -(a + b)$

   b) Given, $a = 141, b = -39$

Taking LHS $-a+(-b)=-141+[-(-39)]$

$=-141+(+39)=-102$

Now, taking RHS, $-(a+b)=-141+[-(-39)]$

$=-[141+(-39)]=-102$

Hence, $-a+(-b)=-(a+b)$

3. For a pair of integers, whose sum is -11

$=-21+10=-11$

b) For a pair of integers, whose difference is -19

$=-12-7=-19$

4) a) Given, $a=18$ $b=15$ $C=13$

Taking LHS $a+(b+c)=18+(15+13)=18+28=46]$

Now, taking RHS

$(a+b)+c=(18+15)+13=33+13=46$

Hence, $a+(b+c)=(a+b)+c$

b) Given, $a=-31$, $b=51$ $c=89$

Taking LHS,

$a+(b+c)=-31+(51+89)=-31+140=109$

Now Taking RHS,

$(a+b)+c=(-31+51)+89=20+89=109$

Hence, $a+(b+c)=(a+b)+c$

5. a) Given, $a=12$, $b=13$ $c=19$

Taking LHS,

$(a\times b)\times c=(12\times 13)\times 19=156\times 19=2964$

Now taking RHS

$a\times(b\times c)=12\times(13\times 19)=12\times 247=2964$

Hence $(a\times b)\times c=a\times(b\times c)$

b) Given, $a=-11$ $b=-12$ $c=-3$

Taking LHS

$(a\times b)\times c=[(-11)\times(-12)]\times(-3)$

$=(-11\times 12)\times(-3)=132\times(-3)=-396$

Now, taking RHS

$a \times (b \times c) = (-11) \times [(-12) \times (-3)]$

$= (-11)[(12 \times 3)] = (-11) \times 36 = -396$

Hence, $(a \times b) \times c = a \times (b \times c)$

6. a) LHS $= a + (b + c) = 24 \div (-4 + 8) = 24 \div (4) = 6$

RHS $= (a \div b) + (a \div c) = [24 \div (-4)] + [24 \div 8]$

$= -(24 \div 4) + (24 \div 8) = -6 \div 3 = -3$

$\because LHS \neq$ RHS

Hence, $a + (b + c) \neq (a + b) + (a + c)$

b) LHS $= a \div (b + c) = 16 \div (4 + 4) = 16 \div 8 = 2$

RHS $= a(a \div b) + (a \div c)$

$= (16 \div 4) + (16 \div 4) = 4 + 4 = 8$

$\because$ LHS $\neq$ RHS

Hence, $a \div (b + c) \neq (a \div b) + (a \div c)$.

7. $\because$ Temperature came down $= 5^0$ F

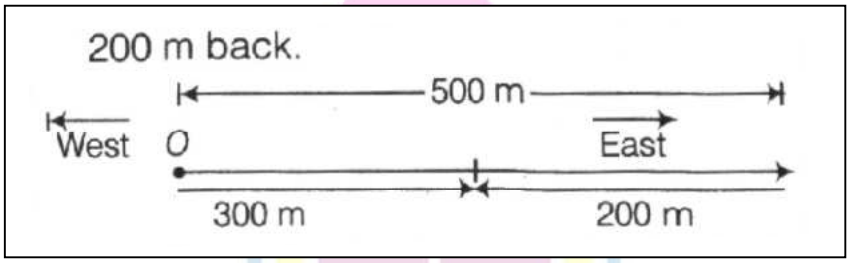
Temperature after taking medicine $= 96.4^0$ F

$\therefore$ Temperature before taking medicine $= 96.4^0 F + 5^0 F = 101.04^0$ F

Depict value : If we are feeling sick, we should consult to a doctor, because without doctor's advice sickness can be increased.

8. True,

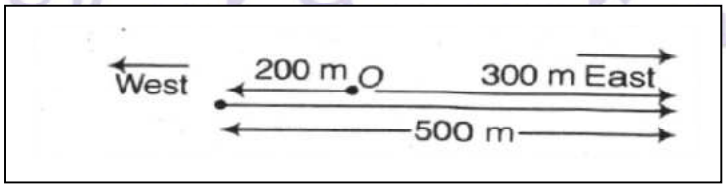
Case I Going 500 m towards east first and then 200 m back



As per the figure shown above final position will be 300 m in East.

Case II

Going 200 m towards West first and then going 500 m back



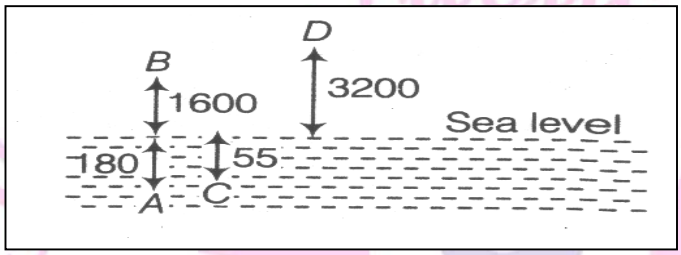
In the given case also, final position will be 300 m in the East.

Hence, given statement is true.

9. a) From the adjacent figure, we can clearly see that C is closest to sea level.

b) D is farthest from sea level

c) Locations from the least to the greatest elevation will be in the order A,C,B and D



10. Let difference in time be denoted by positive when Sana wins the race and negative when Sana losses the race.

Total difference in time taken by Sana and Fatima in

all the six parts $= 10 - 60 + 20 - 25 - 37 + 12 = -80$s

Hence, Fathima won the race by 80s

11. Since, yash scored 94 marks

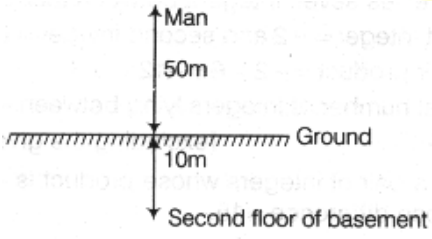
So, minimum correct response $= 94 \div 2 = 47$

Hence, there are two possibilities

i) 47 correct answers and 3 unattempted.

ii) 48 correct answers 1 unattempted and 1 wrong answer.

12. In the following figure, we can clearly see that man will have to cover 60 m to reach second floor of basement.



Since, lift moves with a speed of 1 m/s.

Hence, time taken to reach second floor of basement

$= \frac{Distance}{speed} = \frac{60\ m}{1\ m/s} = 60$ s or 1 min.

13. For e a negative integer and a positive integer whose difference is +2

First integer = 1 and second integer = -1

∴ 1 (—1) = 1 + 1 = 2

14. Total scores of team A = -30 + 5 + 0

= -30 + 5 = -25

Total scores of team B = 20 + 0 + (-10) = 20 – 10

Hence, score of team B was more than team A, Yes, we can ad integer in any order.

15. As per the given information in the question,

Room temperature = 30^0 c

Change in temperature per hour = -5^0 c

Change in temperature in 12 h = 12 × (-5) = - 60^0 c

Room temperature after 12 h = 30^0 c + (- 60^0 c) = - 30^0 c

16. Total number of questions = 20

Total marks = 20 x 5 = 100 marks for 20 questions

If Ajay attempted all but only 9 answer are correct

So, marks for 9 correct answer = 9 × 5 = 45

Incorrect questions = 20 – 9 = 11

Marks for incorrect questions = (-2) × 11 = -22

So, Total score will be 45 – 22 = 23 marks

17. As per the given information, the product of two integers is -216.

First integer = -6 and second integer = s (say)]

So, their product.

(-6) × x = -216

∴ x = $\frac{(-216)}{(-6)}$ = 36

Hence, the other integer is 36

18. For a negative integer and a positive integer whose difference is -14

First integer = -11, Second integer = +3

∴ Difference = -11 (+3) = -14.

IV. Short Answer Questions

1. The sum of two integers is -16. If one of them is 53, find the other.

Let the other integer be a. Then,

$53 + a = -16 \quad a = (-16) - 53$

$A = (-16) + (-53) = -69$

Hence, the other integer is -69

2. At Srinagar temperature -5^0 c on Monday and then it dropped by 2^0 c on Tuesday. What was the temperature of Srinagar on Tuesday? On Wednesday, it rose by 4^0 c . What was the temperature of Srinagar on Tuesday? On Wednesday, it rose by 4^0 c. What was the temperature on this day?

Temperature of Srinagar on Monday $= -5^0$ c

Drop in Temperature on Tuesday $= 2^0$ c

$\therefore$ Temperature on Tuesday $= -5 - 2 = -7\,0$c

Rise in temperature on Wednesday $= 4^0$ c

$\therefore$ Temperature on Wednesday $= -5 + 4 = -3^0$ c

3. Write a pair of integers whose product is -36 and whose difference is 15.

These are few pairs of integers whose product is -36

i.e. -1 x 36	-2 x 18
2 x (-18)	-3 x 12
3 x (-12)	-4 x 9
4 x (-9)	-6 x 6
6 x (-6)	1 x (-36)

But difference of -3 and 12 or 3 and -12 is 15 , So required pair of integers is -3,12 and -12 ,3

4. Mohan deposits Rs.2000 in his bank account and withdraws Rs.1642 from it the next day. If withdrawal of amount from the account is represented by a negative then how will you represent the amount deposited? Find the balance in Mohan's account after the w withdrawal

Amount deposited by Mohan = Rs 2,000

Amount withdrawn by Mohan = Rs 1,642

If withdrawal amount is represented by negative integer, then amount deposited is represented by positive integer

Balance in Mohan account = Amount deposited – Amount withdrawn

= Rs.2,000 – 1,642 = Rs.358

5. 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?

Score of Team A = -40, 10, 0

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

= 10 – 40 = -30

Score of Team B = 10, 0, -40

Total score of Team B = 10 + 0 – 40

= 10 – 40 = -30

∴ Both team's scored is same i.e. -30 Yes we can add integers in any order.

6. A certain freezing process requires that room temperature be lowered from 40 ^{0} c at the rate of 5 ^{0} c every hour. What will be the room temperature 10 hours after the process begins?

Temperature after n hours = (40 – 5n) ^{0} c

∴ Temperature after 10 hours = (40 -5 x 10) ^{0} c

= (40 -50) ^{0} c = - 10 ^{0} c

Hence, the room temperature after 10 hours would be – 10 ^{0} c.

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

[Hint : If A and B are two points at distances p and q respectively from origin, then AB = $[p - q]$.]

Let the point 0 denote the ground level

Then, OA = 10m and)B = -350 m

∴ AB = $|OA - OB|$ = $|10 - (-350)|$

=10 + 350 =360 m

∴ Distance covered = 360 m

Rate of descent = 6 m / min

Time taken = $\frac{360}{6}$ min = 60 min = 1 hour

8. Simplify : [60 × (- 3) } ÷ $\overline{45 \div (-3)}$

We have { 60 x (-3) } ÷ $\overline{45 \div (-3)}$

$\{60 \times (-3)\} \div (-15)$

$= (-180) \div (-15) = 12.$

9. Simplify : $25\ \frac{1}{2}\{5 + 4 - (3 + 2 - \overline{1 + 3})\}$

We have

$25\ \frac{1}{2}\{5 + 4 - (3 + 2 - \overline{1 + 3})\}$

$= 25\ \frac{1}{2}\{5 + 4 - (3 + 2 - 4)\}$

$= 25 - \frac{1}{2}\{5 + 4 - (5-4)\} = 25 - \frac{1}{2}\{9 - 1\}$

$= 25 - \frac{1}{2}\{8\} = 25 - 4 = 21$

10. A shopkeeper gains Rs.2 on each pen and loses 60 paise on each pencil. He sells 60 pens and some pencils doing Rs. 30 in all. How many Pencils does he sell?

Suppose he sells × Pencils

Total gain on pens = Rs.60 × 2 = Rs.120

Total loss on pencils = Rs. $\frac{60x}{100}$ = Rs. $\frac{3x}{5}$

$\therefore 120 - \frac{3x}{5} = -30$

$\Rightarrow \frac{3x}{5} = (120 + 30)$

$\Rightarrow \frac{3x}{5} = 150$

$\Rightarrow x = \frac{150\ x\ 5}{3} = 250$

Hence, the number of pencils sold is 250.

I. Long Answer Questions

1. 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 each question not attempted.

a) Mohan gets 6 correct and 4 incorrect answers what is his score?

b) Rekha gets 5 correct and 3 incorrect answers and 2 questions she did not attempt. What is her score?

c) Mayank gets 5 correct and 5 incorrect answers. What is his score?

d) Jeetu gets 3 correct and 5 incorrect answers. What is his score?

a) Score of Mohan = $6 \times (5) + 4 \times (-2)$

$= 30 + (-8)$

$= 30 - 8 = 22$

b) Rekha's score $= 5 \times (5) + 3 \times (-2) + 2 \times 0$

$= 25 + (-6) + 0$

$= 25 - 6 = 19$

Mayank's score $= 5 \times (5) + 5 \times (-2)$

$= 25 + (-10) = 25 - 10 = 15$

d) Jeet's score $= 3 \times (5) + 5 \times (-2)$

$= 15 + (-10) = 15 - 10 = 5$

2. What will be the sign of the product of 95 negative integers and 6 positive integers?

b) Evaluate : $399 - (-1) + (-20) \times (-20) - 800$.

a) Since sign of the product of odd number of negative integer be negative

Sign of product of 95 negative integers will be negative

Again, when even number of (+ve) integers are multiplied, sign of product will be (+ve)

So, (-ve) sign integer x (+ve) sign integer = (-ve) sign integer

b) $399 - (-1) + (-20) \times (-20) - 800$

$= 399 + 1 + 400 - 800$

$= 400 + 400 - 800$

$= 800 - 800 = 0$.

3. Simplify : $27 - [5 + \{28 - 22\}]$

We have, $27 - [5 + \{28 - 22\}] = 27 - [5 + \{28 - 22\}]$

[Removing the innermost brackets]

$= 27 - [5 + 6]$ [Removing Brackets]

$= 27 - 11 = 16$.

4. Simplify : $48 - [18 - \{16 - (5 - 4 - 1)\}]$

We have $48 - [18 - \{16 - 5 (5 - 4 - 1)\}]$

$48 - [18 - \{16 - (5 - 3)\}]$

[Removing vinculum]

$= 48 - [18 - (16 - 2)]$ [Removing Parentheses]

$= 48 - [18 - 14]$) [Removing braces]

$= 48 - 4 = 44$.

5. Simplify : 222 - $\left[\frac{1}{3}\{42+(56-\overline{8+9}\}+108\right]$

We have : 222 - $\left[\frac{1}{3}\{42+(56-\overline{8+9}\}+108\right]$

$= 222 - \left[\frac{1}{3}\{42+(56-17\}+108\right]$ [Removing vinculum]

$= 222 - \left[\frac{1}{3}\{42+39+108\right]$ [Removing Parentheses]

$= 222 - \left[\frac{81}{3}+108\right]$ [Removing braces]

$= 222 - [27+108]$

$= 222 - 135 = 87$

6. Simplify : 39 – [23- {29 – (17 – 9 - 3)}]

We have

$39 - [23 - \{29 - (17 - \overline{9 - 3})\}]$

$39 - [23 - \{29 - (17 - 6)\}]$ [Removing vinculum]

$39 - [23 - \{29 - 11)\}]$ [Removing Parentheses]

$39 - [23 - 18]$ [Removing braces]

$= 39 - 5 = 34.$

7. 118- [121 ÷(11 × 11) – (- 4) – {3 – 9- 2}]

We have

$= 118 - [121 \div (11 \times 11) - (-4) - \{3 - \overline{9-2}\}]$

$= 118 - [121 \div (11 \times 11) - (-4) - \{3 - 7\}]$

$= 118 - [121 \div 121 - (-4) - \{3 - 7\}]$

$= 118 - [1 + 4 + 4]$

$[(-3) = 118 - 9 = 109$

8. In a test (+5) marks are given for every correct answer and (- 2) marks are given for every incorrect answer. Jay answered all questions and scored (- 12) marks through he got 4 correct answers. How many incorrect answers he attempted.

Marks for one correct answer = +5

Marks for one incorrect answer = -2

Marks given for 4 correct answer = 5 x 4 = 20

Score of Jay = - 12

Marks received by him for incorrect answer = -12 - 20 = - 32

Marks given for one incorrect answer = -2

∴ Number of incorrect answer = (-32) ÷ (-2)

= (32) ÷ 2 = 16

Hence, total answers, Jay attempted which were incorrect is 16 answers.

II Long Answer Questions

1. Write a pair of integers whose product is - 12 and there lies seven integers between them (excluding the given integers.)
2. Write a pair of integers whose product is - 36and whose difference is 14.
3. Write two integers which are smaller than - 5 but their difference is - 5 but their difference is - 5
4. Write two integers, which are greater than - 10 but their sum is smaller than - 9
5. Write two integers, which are greater than - 4 but their difference is smaller than - 2.
6. You have Rs.500 in your savings account at the beginning of the month. The record below show all of your transactions during the month.

Cheque number	Date	Transaction description	Payment	Deposit
384102	4/9	Jal Board	Rs 120	--
275146	12/9	Deposit	--	Rs 200
384013	22/9	LIC of India	Rs 240	--
801351	29/9	Deposit	---	Rs 150

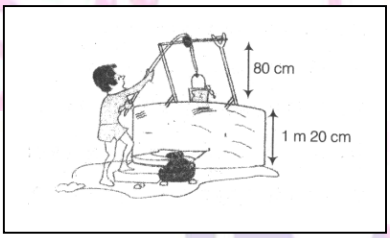
How much money is in your account after these transactions

7. You are at an elevation 380 m above sea level as you start a motor ride. During the ride, your elevation changes by 540 m, - 268 m, 116 m , - 152 m ,490 m ,- 844 m and 94 m. What is your elevation relative to the sea level . What is your elevation relative to the sea level at the end of the ride?
8. Height of a place A is 1800 m above sea level. Another place B is 700 m below sea level. What is the difference between the levels of these two places?
9. A green grocer had a profit of Rs 47 on Monday a loss of 12 on Tuesday and loss of Rs 8 on Wednesday. Find his net profit or loss in 3 days.
10. The highest point measured above sea level in the summit of Mt. Everest, which is 8848 m above sea level and the lowest point is challenger deep at the bottom of Mariana Trench, which is 8848 m above sea level and the lowest point is challenger

deep at the bottom of mariana Trench, which is 10911 m below sea level. What is the vertical distance between these two points.

11. Water level in a well was 20 m below ground level. During rainy season, rain water tanks was drained into the well and the water level rises 5 m above the previous level, the well is 1 m 20 cm high and a pulley is fixed at a height of 80 cm Raghu wants to draw water from the well. The minimum length of the rope that he can use, is

a) 17 m b) 18 m c) 96 m d) 97 m



12. Science Application An atom consists of charged particles called electrons and protons. Each proton has a charge of + 1 and each electron has a charge of - 1. Remember that number of electrons is equal to number of protons. While answering these questions.

a) What is the charge on an atom?

b) What will be the charge on an atom, if it loses an electron?

c)What will be the charge on an atom, if it gains an electron?

13. An atom changes to a charged particle called ion if it loses or gains electrons. The charge on anion is the charge on electrons plus charge on protons. Now write the missing information in the table given below.

Number of ion	Proton	Electron charge	Ion charge
Hydroxide ion	+ 9	-	- 1
Sodium ion	+11	-	+1
Aluminium ion	+ 13	- 10	- -
Oxide ion	+ 8	- 10	- -

14. Social studies Application Remembering that 1 AD came immediately after 1 BC, while solving these problems take 1 BC as – 1 and 1AD as + 1

a) The Greeco- Roman are when Greece and Rome ruled Egypt started in the year 330 BC and ended in the year 395 AD. How long did this era last

b) Bhaskaracharya was born in the year 1114 AD and died in the year 1185 AD. What was his age when he died.

c) Turks ruled Egypt in the year 1517 AD and Queen Nephritis ruled Egypt about 2900 yr. Before the Turks ruled in what year did she rule?

d) Greek Mathematician Archimedes lived between 287 BC and 212 BC and Aristotle lived between 380 BC and 322 BC. Who lived during an earlier period?

1. For a pair of Integers whose product is -12 and there lies seven integers between them. First integer = - 2 and second integer = 6

Their product = -2 x 6 = -12

Total number of integers lying between -2 to 6 = 7 [excluding the given integers].

2. For a pair of Integers whose product is -36 and whose difference = 15

So, first integer = -3 and second integer = 12

Their product = (-3) x 12 = -(3 x 12) = -36 and the difference between these two integer is 15.

3. For two integers which are smaller than -5, but their difference is -5.

So, first integer = -11 and second integer = -6

Their difference = -11 – (-6) = -11 + 6 = -5

4. For two integers, which are greater than -10, but their sum is smaller than -9.

So, first integer = -6 and second integer = -5

∴ Sum of integers = -6 + (-5) = -11

5.For two integers, which are greater than -4, but their difference is smaller than -2.

So, first integer = -3 and second integer = -1

Their difference = -3 -1 = -4

Hence, -4 is smaller than -2.

6. As per the given information in the question, Already available saving amount is Rs.500. On 4/9 with cheque number 384102 withdraw Rs. 120, also with cheque number 275146 on 12/9 deposited amount was Rs.200.

In the same way on 22/9 with cheque number 384103, Rs.240 paid to LIC of India, also. On 29/9 with cheque number 801351, deposited amount was Rs.150.

Thus, net amount available in bank account will be

= Already saved amount + Deposited amount – Debited amount (amount which are paid)

= 500 + 200 + 150 – 120 – 240

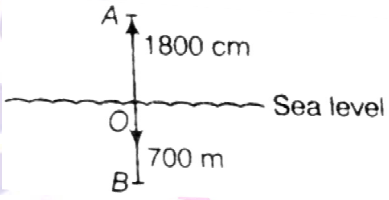
= 850 + (-360) = Rs.490.

7.As per the given information, initial position of motor was 380 m.

During the ride, change in elevation was 540 m, 268m , 116 m – 152 m, 490m -844m and 94 m, Net change in position

= 540 + (-268) + (116) + (-152) + (490) + (-844) + 94 = -24 m

8. As per the given information, we can draw the given diagram. Let O be the point of level of sea.



Difference between these two points A and B.

= Height between sea level and point A + Height between point B and sea level.

= AO + OB = 1800 + 700

= 2500 m.

9. As per the given information,

Profit on Monday = Rs.47

Loss on Tuesday = Rs. 12

Loss on Wednesday = Rs. 8

∴ Net profit = Total profit - Total loss

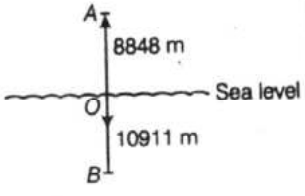
Now, total profit = 47

And total loss = 12 + 8 = 20

∴ Net profit = 47 – 20 = Rs.27.

10. As per the given information, we can draw the given diagram.

Let A be the point above the sea level and B be the point below the sea level.



∴ Vertical distance between points A and B

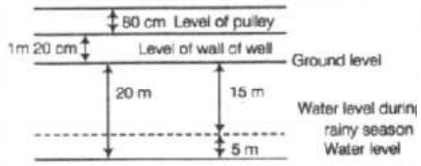
= Distance between point A and sea level + Distance between point A and sea level + Distance between point B and sea level.

= AO + OB = 8848 + 10911 = 19759 m

11. Details given in the question can be described in the figure shown below:

From above figure it is clear that,

Minimum length of the rope required to draw the water during the rainy season = Distance between pulley and wall of well + Height of well + Distance between water level during rainy season and ground level =



(0.8 + 1.2 + 15)m = 17 m.

Hence, options (a) is correct.

12. (a) Let a be the number of electrons in an atom.

Number of protons in the atom will also be equal to a. Since, an atom has equal number of protons and electrons.

Total charge in 'a' electrons = - a.

Total charge in 'a' protons = + a

Hence, total charge on the atom = -a + a = 0.

(b) If an atom loses an electron, it will have 'a -1' electrons and 'a' protons.

Charge in 'a – 1' electrons = - (a -1) = 1 – a.

Charge in 'a' protons = + a.

Hence, total charge on the atom = -1 - a + a = +1

. (c) If an atom gains an electron, it will have 'a + 1' electrons and 'a' protons.

Charge in 'a + 1' electrons and 'a' protons.

Charge in 'a' protons = +a

Hence, total charge on atom = a (a+ 1) = -1.

13. a) For hydroxide ion,

Proton charge + Electron charge = -1 -9 = -10

Hence the electron charge in an hydroxide ion is -10.

b) For Sodium ion,

Electron charge = Ion charge – Proton charge = +1 -11-10

Hence, the electron charge in an hydroxide ion is – 10.

c) For aluminium ion,

Ion charge = + 13 -10 = 3

Hence, the ion charge in an aluminium ion is 3.

d) For oxide ion,

Ion charge = +8 – 10 = -2

Hence the ion charge in a oxide ion is -2

14.a) Total duration of the era = End year - Start year

= (395 AD) – (330BC) = + 395 – (-330)

= 395 + 330 = 725 yr.

Hence, total duration of this era was 725 yr.

b) Age when Bhaskaracharya died

= Year in which he dies - Year in which he born

= (1185 AD) – (1114 AD)

= (+1185) + (+ 1114) = 1185 – 1114 = 71 yr.

Hence, Bhaskaracharya was died in the age of 71yr.

c) Year in which Queen Nefertis ruled

= Year in which Turks ruled – 2900 yr.

= (1517 AD) – 2900 = (+ 1517) – 2900

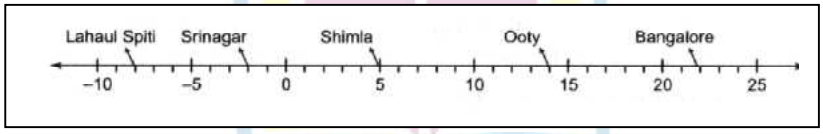
= -1383 = 1383 BC

Hence, Queen Nefertis ruled in the year 1383 BC.

d) Aristotle lived in an earlier period, as 380 BC and 322 BC is earlier than 287 BC and 212 BC.

III Long Answer Questions

1. Following number line shows the temperature in degree Celsius (^{0}C) at different places on a particular day.



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

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

iii) What is the temperature difference between Lahaul Spiti and Srinage?

iv) Can we say temperature of Srinagar and Shimla taken together in less than the temperature at Shimla? Is it also less than the temperature at Srinagar?

i) Lahaul Spiti: -8^0C, Srinagar: -2^0C, Shimla: 5^0C, Ooty: 2^0C, Bangalore 22^0C

ii) 30^0C iii) 6^0C iv) Yes, No

2. Find the product, using suitable properties :

i) $26 \times (-48) + (-48) \times (-36)$ **ii) $8 \times 53 \times (-125)$**

iii) $15 \times (-25) \times (-4) \times (-10)$ **iv) $625 \times (-35) + (-625) \times 65$**

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

i) We have $26 \times (-48) \times (-36)$

$=\{26 \times (-48)\} + \{(-48) \times (-36)\}$

$= (-1,248) + (1,728) = 480$

ii) We have $8 \times 53 \times (-125)$

$= \{8 \times 53\} \times (-125)$

$= (424) \times (-125) = -53,000$

iii) We have $15 \times (-25) \times (-4) \times (-10)$

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

$= 15 \times -(100 \times 10)$

$= 15 \times -(1000) = -15000$

iv) We have $) 625 \times (-35) + (-625) \times 65)$

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

$= =[\therefore 625 \times (-35) = -(625 \times 35)) = (-625) \times 35]$

$= (-625) \times (35 + 65)$ [using : $a \times b + a \times c = a \times (b + c)$

$= (-625) \times (100) = -62,500$

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

$= (-57) \times (-19) + (-57) \times (-1)$ $[\therefore (-57) \times (-1) = 57]$

$= (-57) \times (-19-1)$ [using $a \times b + a \times c = a \times (b + c)$

$= (-57) \times (-20) = 1,440.$

3. Evaluate each of the following :

i) $13 \div [(-2) + 1]$ **ii) $(-31) \div [(-30) + (-1)]$** **iii) $[(-36) \div 12] \div 3$**

iv) $[(-6) + 5)] \div [(-2) + 1]$ **v) $[(-3) + (-3)] \div [(-3) + 2]$**

i) We have ,

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

$= \frac{13}{-1} = \frac{13}{-1} = -13$

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

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

$= (-31) \div (-31) = \frac{-31}{-31} = 1.$

iii) $[(-36) \div 12] \div 3$

$= \left(\frac{-36}{12}\right) \div 3$

$= (-3) \div 3 = \frac{-3}{3} = -1$

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

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

$= (-1) \div (-1) = \frac{-1}{-1} = 1.$

v) $[(-3) + (-3)] \div [(-3) + 2]$

$= (-3-3) \div (-3 + 2)$

$= (-6) \div (-1) = \frac{-6}{-1} = 6$

4. Write a pair of integers whose sum gives

i) Zero **ii) A negative integer;**

iii) An integer smaller than both the integers;

iv) An integer greater than both the integers;

v) An integer smaller than only one of the integers.

[Hint : i) 6 and (-6) ii) 4 and (-9) iii) (-3) and (-5) iv) 4 and 5 v) 5 and (-3)]

i) 5, -5 and 4, -4 ii) 3, -7 and 6, -9 iii) -2, -4 and -1, -2 iv) 3,5 and 4,6

v) 6, -4 and 4, -2.

5. If * is an operation such that for integers a and b we have

$a * b = a \times b + (a \times a + b \times b)$

then find (i) (-3) * (-5) **ii) (-6) * 2**

We have, $a * b = a \times b + (a \times a + b \times b)$

i) Here, $a = (-3)$ and $b = (-5)$

So, putting the values in above equation

$(-3) * (-5) = [(-3) \times (-5) + (-3) \times (-3) + (-5) \times (-5)]$

$= [(15) + (9) + (25)]$

$= (15) + (9) + (25)$

$= (15 + 9 + 25) = 49.$

ii) Here, $a = (-6)$ and $b = 2$

So, putting the values in above e.g. we get.

$(-6) * 2 = (-6) \times 2 + [(-6) \times (-6) + 2 \times 2]$

$= -12 + [(36) + 4]$

$= -12 + (-40) = 40 - 12 = 28.$