

Exercise 1.1

1. (i) 256 and (-312)

$$256 + (-312) = -(312 - 256)$$

$$= -56$$
- (ii) -319 and -136

$$-319 + (-163) = -(319 + 136)$$

$$= -455$$
- (iii) -127 and 300

$$-127 + 300 = +(300 - 127)$$

$$= 173$$
- (iv) -197 and 214

$$-197 + 214 = +(214 - 197)$$

$$= 17$$
- (v) -84 and -112

$$-84 + (-112) = -(84 + 112)$$

$$= -196$$
- (vi) 215 and -42

$$215 + (-42) = +(215 - 42)$$

$$= 173$$
2. (i) 32 from -56

$$-56 - 32 = -56 + (-32)$$

(Negative of 32 is -32)

$$= -(56 + 32)$$

$$= -88$$
- (ii) -73 from -80

$$-80 - (-73) = -80 + 73$$

$$= -(80 - 73)$$

$$= -7$$
- (iii) -63 from 72

$$72 - (-63) = 72 + 63$$

$$= 135$$
- (iv) -32 from 0

$$0 - (-32) = 0 + 32$$

$$= 32$$
- (v) -92 from -23

$$-23 - (-92) = -23 + 92$$

$$= +(92 - 23)$$

$$= 69$$

(vi) -26 from 59

$$59 - (-26) = 59 + 26$$

$$= 85$$

3. The sum of -524 and 678 = -524 + 678

$$= +(678 - 524)$$

$$= +154$$

Now, subtract the sum from -92, therefore

$$-92 - (+154) = -92 - 154$$

$$= -(154 + 92)$$

$$= -246$$

4. The sum of 83 and -56 = 83 + (-56)

$$= 83 - 56$$

$$= 27$$

Now, subtract -341 from the sum, therefore

$$27 - (-341) = 27 + 341$$

$$= 368$$

5. Ist integer + IInd integer = -278

$$-156 + \text{IInd integer} = -278$$

$$\text{IInd integer} = -278 - (-156)$$

$$= -278 + 156$$

$$= -(278 - 156)$$

$$= -122$$

Hence, the IInd integer is -122.

6. The sum of -42 and -147 = -42 + (-147)

$$= -42 - 147$$

$$= -(42 + 147)$$

$$= -189$$

The difference of -283 and -415 = -283 - (-415)

$$= -283 + 415$$

$$= +(415 - 283)$$

$$= 132$$

Now, subtract the sum from difference, we get,

$$132 - (-189) = 132 + 189 = 321$$

7. $14 - (-18) + [-32 - (-15)] = 14 - (-18) + [-32 + 15]$

$$= 14 - (-18) + (-17)$$

$$= (14 + 18) - 17$$

$$= 32 - 17 = 15$$

8. $a = -10, b = -4$ (given)

$$\begin{aligned} a - b &= -10 - (-4) \\ &= -10 + 4 \\ &= -(10 - 4) \\ &= -6 \end{aligned}$$

And, $b - a = -4 - (-10)$

$$\begin{aligned} &= -4 + 10 \\ &= +(10 - 4) \\ &= +6 \end{aligned}$$

Hence, $a - b \neq b - a$

9. (i) $3 + (-4) + (-5) - (-4) = 3 - 4 + (-5) - (-4)$

$$\begin{aligned} &= (-1) - 5 - (-4) \\ &= -(1 + 5) - (-4) \\ &= -6 - (-4) \\ &= -6 + 4 \\ &= -(6 - 4) \\ &= -2 \end{aligned}$$

(ii) $(-6) + (-9) + (-41) = -(6 + 9) + (-41)$

$$\begin{aligned} &= (-15) + (-41) \\ &= -(15 + 41) \\ &= -56 \end{aligned}$$

10. (i) $[23 - (-9)] + [12 - (-6)] = (23 + 9) + [12 - (-6)]$

$$\begin{aligned} &= 32 + (12 + 6) \\ &= 32 + 18 \\ &= 50 \end{aligned}$$

(ii) $-15 + (-63) - (-45) + (-16) = -15 - 63 - (-45) + (-16)$

$$\begin{aligned} &= -(15 + 63) - (-45) + (-16) \\ &= -78 + 45 + (-16) \\ &= -(78 - 45) + (-16) \\ &= -33 - 16 \\ &= -(33 + 16) \\ &= -49 \end{aligned}$$

Exercise 1.2

1. (i) $6 \times (-12) = -(6 \times 12)$

$$\begin{aligned} &[\because (+) \times (-) = (-)] \\ &= -72 \end{aligned}$$

(ii) $10 \times (-6) \times (-1) = -(10 \times 6) \times (-1)$

$$\begin{aligned} &[\because (+) \times (-) = (-)] \\ &= -60 \times (-1) \\ &= +(60 \times 1) \\ &[\because (-) \times (-) = +] \\ &= 60 \end{aligned}$$

(iii) $(-17) \times (-5) = +(17 \times 5)$

$$\begin{aligned} &[\because (-) \times (-) = (+)] \\ &= 85 \end{aligned}$$

(iv) $(-1) \times (-5) \times (-7) \times (-2) = +(1 \times 5) \times (-7) \times (-2)$

$$\begin{aligned} &[\because (-) \times (-) = (+)] \\ &= 5 \times (-7) \times (-2) \\ &= -(5 \times 7) \times (-2) \\ &[\because (+) \times (-) = (-)] \\ &= -35 \times (-2) \\ &= +(35 \times 2) \\ &[\because (-) \times (-) = (+)] \\ &= 70 \end{aligned}$$

(v) $6 \times (-5) \times (-5) \times (-2) = -(6 \times 5) \times (-5) \times (-2)$

$$\begin{aligned} &[\because (+) \times (-) = (-)] \\ &= -30 \times (-5) \times (-2) \\ &= +(30 \times 5) \times (-2) \\ &[\because (-) \times (-) = (+)] \\ &= 150 \times (-2) \\ &= -(150 \times 2) \\ &[\because (+) \times (-) = (-)] \\ &= -300 \end{aligned}$$

(vi) $0 \times 192 \times (-32) = 0 \times (-32)$

$$= 0$$

(vii) $20 \times (-123) \times (-5) = -(20 \times 123) \times (-5)$

$$\begin{aligned} &[\because (+) \times (-) = (-)] \\ &= -2460 \times (-5) \\ &= +(2460 \times 5) \\ &[\because (-) \times (-) = (+)] \\ &= 12300 \end{aligned}$$

(viii) $(-12) \times (-5) \times 12 = +(12 \times 5) \times 12$

$$\begin{aligned} &[\because (-) \times (-) = (+)] \\ &= 60 \times 12 \\ &= 720 \end{aligned}$$

(ix) $3 \times (-8) \times 5 = -(3 \times 8) \times 5$

$$\begin{aligned} &[\because (+) \times (-) = (-)] \\ &= -24 \times 5 \\ &= -(24 \times 5) \\ &[\because (-) \times (+) = (-)] \\ &= -120 \end{aligned}$$

(x) $(-6) \times (-3) \times (-1) \times (-2) = +(6 \times 3) \times (-1) \times (-2)$

$$\begin{aligned} &[\because (-) \times (-) = (+)] \\ &= 18 \times (-1) \times (-2) \\ &= -(18 \times 1) \times (-2) \\ &[\because (+) \times (-) = (-)] \\ &= -18 \times (-2) \\ &= +(18 \times 2) \\ &[\because (-) \times (-) = (+)] \\ &= 36 \end{aligned}$$

2. (i) $3276 \times 3 - 3276 \times 2 = 3276 \times (3 - 2)$
(Distributive law)
 $= 3276 \times 1$
 $= 3276$

(ii) $8964 \times 1 + 99 \times 8964 = 8964 \times (1 + 99)$
(Distributive law)
 $= 8964 \times 100$
 $= 896400$

(iii) $1695 \times 678 - 695 \times 678 = (1695 - 695) \times 678$
(Distributive law)
 $= 1000 \times 678$
 $= 678000$

(iv) $2314 \times 9 + 2314 = 2314 \times (9 + 1)$
(Distributive law)
 $= 2314 \times 10$
 $= 23140$

3. (i) $23 \times \{7 + (-2)\} = 23 \times 7 + 23 \times (-2)$
Taking L.H.S. $= 23 \times \{7 + (-2)\}$
 $= 23 \times \{+(7 - 2)\}$
 $= 23 \times 5$
 $= 115$

Now, taking R.H.S. $= 23 \times 7 + 23 \times (-2)$
 $= 161 + 23 \times (-2)$
 $= 161 + \{-23 \times 2\}$

$[\because (+) \times (-) = (-)]$
 $= 161 + (-46)$
 $= +(161 - 46)$
 $= 115$

Hence, L.H.S. = R.H.S. (verified)

(ii) $(-18) \times [(-3) + (-5)] = [(-18) \times (-3)] + [(-18) \times (-5)]$

L.H.S. $= (-18) \times [(-3) + (-5)]$
 $= (-18) \times [-(3 + 5)]$
 $= -18 \times (-8)$
 $= +(18 \times 8)$

$[\because (-) \times (-) = (+)]$
 $= 144$

Now, R.H.S. $= [(-18) \times (-3)] + [(-18) \times (-5)]$
 $= +(18 \times 3) + [(-18) \times (-5)]$

$[\because (-) \times (-) = (+)]$
 $= 54 + [+(18 \times 5)]$

$[\because (-) \times (-) = (+)]$
 $= 54 + 90$
 $= 144$

Hence, L.H.S. = R.H.S. (verified)

4. (i) The multiplicative inverse (reciprocal) of $6 = \frac{1}{6}$

(ii) The multiplicative inverse of $\frac{-1}{3} = -3$

(iii) The multiplicative inverse of $-4 = \frac{-1}{4}$

(iv) The multiplicative inverse of $\frac{-5}{2} = \frac{-2}{5}$

5. (i) $-23 \times (-1) = +(23 \times 1)$
 $[\because (-) \times (-) = (+)]$
 $= 23$

Hence, the required integer is (-23) .

(ii) $47 \times (-1) = -(47 \times 1)$
 $[\because (+) \times (-) = (-)]$
 $= -47$

Hence, the required integer is 47 .

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

Hence, the required integer is 0 .

6. (i) $(-5) \times 19 \times (-60) = [(-5) \times (-60)] \times 19$
 $= +(5 \times 60) \times 19$

$[\because (-) \times (-) = (+)]$
 $= 300 \times 19$
 $= 5700$

(ii) $25 \times 31 \times (-4) = [25 \times (-4)] \times 31$
 $= -(25 \times 4) \times 31$

$[\because (+) \times (-) = (-)]$
 $= -100 \times 31$
 $= -3100$

(iii) $97 \times 25 \times (-2) \times (-4) = 97 \times [25 \times (-2)] \times (-4)$
 $= 97 \times [-(25 \times 2)] \times (-4)$

$[\because (+) \times (-) = (-)]$
 $= 97 \times (-50) \times (-4)$
 $= 97 \times [(-50) \times (-4)]$
 $= 97 \times [+(50 \times 4)]$

$[\because (-) \times (-) = (+)]$
 $= 97 \times 200$
 $= 19400$

(iv) $(-2) \times 4896 \times (-5) = [(-2) \times (-5)] \times 4896$
 $= +(2 \times 5) \times 4896$

$[\because (-) \times (-) = (+)]$
 $= 10 \times 4896$
 $= 48960$

$$7. (i) b \times (a + c) = b \times a + b \times c$$

$$\text{Given } a = 3, b = -2, c = -1$$

$$\begin{aligned} \text{L.H.S.} &= b \times (a + c) \\ &= (-2) \times [3 + (-1)] \\ &= (-2) \times (3 - 1) \\ &= (-2) \times 2 \\ &= -4 \end{aligned}$$

$$\begin{aligned} \text{R.H.S.} &= b \times a + b \times c \\ &= (-2) \times 3 + (-2) \times (-1) \\ &= -(2 \times 3) + (2 \times 1) \\ &= (-6) \times 2 \\ &= -6 + 2 \\ &= -4 \end{aligned}$$

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

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

$$\text{Given that } a = 3, b = -2, c = -1$$

$$\begin{aligned} \text{Taking, } b \times c \times a &= (-2) \times (-1) \times 3 \\ &= +(2 \times 1) \times 3 \\ [\because (-) \times (-) &= (+)] \\ &= 2 \times 3 \\ &= 6 \end{aligned}$$

$$\begin{aligned} \text{Now, taking, } a \times b \times c &= 3 \times (-2) \times (-1) \\ &= -(3 \times 2) \times (-1) \end{aligned}$$

$$\begin{aligned} [\because (+) \times (-) &= (-)] \\ &= -6 \times (-1) \\ &= +(6 \times 1) \\ [\because (-) \times (-) &= (+)] \\ &= 6 \end{aligned}$$

$$\begin{aligned} \text{Further we take, } c \times a \times b &= (-1) \times 3 \times (-2) \\ &= -(1 \times 3) \times (-2) \end{aligned}$$

$$\begin{aligned} [\because (-) \times (+) &= (-)] \\ &= (-3) \times (-2) \\ &= +(3 \times 2) \\ [\because (-) \times (-) &= (+)] \\ &= 6 \end{aligned}$$

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

$$(iii) b \times c = c \times b$$

$$\text{Given that } b = -2, c = -1$$

$$\begin{aligned} \text{Taking L.H.S.} &= b \times c \\ &= (-2) \times (-1) \\ &= +(2 \times 1) \end{aligned}$$

$$\begin{aligned} [\because (-) \times (-) &= (+)] \\ &= 2 \end{aligned}$$

Again, taking R.H.S. = $c \times b$

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

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

$$[\because (-) \times (-) = (+)]$$

$$= 2$$

Hence, L.H.S. = R.H.S. (Verified)

$$8. (i) 2 * 5$$

$$\text{We have, } a * b = a \times b - (a + b)$$

$$\begin{aligned} \text{Therefore, } 2 * 5 &= 2 \times 5 - (2 + 5) \\ &= 10 - 7 \\ &= 3 \end{aligned}$$

$$(ii) (-4) * (-6) = (-4) \times (-6) - \{(-4) + (-6)\}$$

$$\begin{aligned} [\because a * b &= a \times b - (a + b)] \\ &= +(4 \times 6) - \{-(4 + 6)\} \\ [\because (-) \times (-) &= (+)] \end{aligned}$$

$$= 24 - (-10)$$

$$= 24 + 10$$

$$= 34$$

$$(iii) (-13) * (-6) = (-13) \times (-6) - \{(-13) + (-6)\}$$

$$\begin{aligned} [\because a * b &= a \times b - (a + b)] \\ &= +(13 \times 6) - \{-(13 + 6)\} \\ [\because (-) \times (-) &= (+)] \end{aligned}$$

$$= 78 - (-19)$$

$$= 78 + 19$$

$$= 97$$

Exercise 1.3

$$1. (i) 45 \div (-9) = \frac{45}{(-9)} = -\left(\frac{45}{9}\right) = -5$$

$$(ii) (-243) \div 9 = \frac{(-243)}{9} = -\left(\frac{243}{9}\right) = -27$$

$$(iii) (-36) \div (-4) = \frac{(-36)}{(-4)} = \frac{36}{4} = 9$$

$$(iv) (-5525) \div (-221) = \frac{(-5525)}{(-221)} = \frac{5525}{221} = 25$$

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

$$(vi) 729 \div 9 = \frac{729}{9} = 81$$

$$(vii) (-133) \div (-19) = \frac{(-133)}{(-19)} = \frac{133}{19} = 7$$

$$(viii) (-90) \div (-15) = \frac{(-90)}{(-15)} = \frac{90}{15} = 6$$

$$(ix) 105 \div (-21) = \frac{105}{(-21)} = -\left(\frac{105}{21}\right) = -5$$

$$(x) (-810) \div 27 = \frac{(-810)}{27} = -\left(\frac{810}{27}\right) = -30$$

$$2. (i) \frac{-441}{21} = -\left(\frac{441}{21}\right) = -21$$

$$(ii) \frac{-195}{-13} = \frac{195}{13} = 15$$

$$(iii) \frac{576}{-24} = -\left(\frac{576}{24}\right) = -24$$

$$(iv) \frac{-784}{-56} = \frac{784}{56} = 14$$

$$3. (i) [(-49) \div 7] \div (-7) = (-7) \div (-7)$$

$$\left[\because -\left(\frac{49}{7}\right) = -7 \right]$$

$$= 1$$

$$(ii) [(-11) + (-5)] \div [3 + (-1)] = [(-11) - 5] \div (3 - 1)$$

$$= -(11 + 5) \div 2$$

$$= (-16) \div 2 = -8$$

$$(iii) (45 \div 9) - [(-36) \div 9] = 5 - [(-36) \div 9]$$

$$= 5 - (-4)$$

$$= 5 + 4 = 9$$

$$(iv) [(-56) \div (-8)] + [(-7) \div 7] = 7 + [(-7) \div 7]$$

$$[\because (-56) \div (-8) = 7]$$

$$= 7 + (-1)$$

$$= 7 - 1$$

$$= 6$$

$$4. \text{ Given that } a = 24, b = 8, c = 4$$

$$\text{Taking, L.H.S.} = a \div (b + c)$$

$$= 24 \div (8 + 4)$$

$$= 24 \div 12$$

$$= 2$$

$$\text{Now, taking R.H.S.} = (a \div b) + (a \div c)$$

$$= (24 \div 8) + (24 \div 4)$$

$$= 3 + 6 = 9$$

Hence, L.H.S. \neq R.H.S.

5. Many Cases is possible for $a \div b = -4$

Therefore,

$$\text{if, } 8 \div (-2) = -4$$

$$\Rightarrow (8, -2)$$

$$\text{if, } (-8) \div 2 = (-4)$$

$$\Rightarrow (-8, 2)$$

$$\text{if, } 12 \div (-3) = -4,$$

$$\Rightarrow (12, -3)$$

$$\text{if, } -12 \div 3 = -4$$

$$\Rightarrow (-12, 3)$$

Hence, four pairs are (8, -2), (-8, 2), (12, -3) and (-12, 3).

6. If p and q are two integers such that $p < q$, then $p \div q$ is not necessarily an integer.

Therefore, if $p = 3$, and $q = 5$

$$\Rightarrow p \div q = 3 \div 5 = \frac{3}{5}$$

Similarly, such more case arise.

Such as $1 \div 3 = \frac{1}{3}$, $2 \div (-5) = -\frac{2}{5}$, $(-4) \div 7 = -\frac{4}{7}$ and so on.

Exercise 1.4

1. The product of two integers = 270

$$\text{One integer} = -18$$

Then, Other integer = $270 \div (-18)$

$$= \frac{270}{(-18)} = -\left(\frac{270}{18}\right)$$

$$= -15$$

Hence, the other integer is (-15).

2. Integer multiplied by $\frac{4}{9} = -28$

$$\text{Integer} \times \frac{4}{9} = -28$$

$$\text{Integer} = \frac{(-28) \times 9}{4}$$

$$= -\frac{(28 \times 9)}{4}$$

$$= -\frac{252}{4}$$

$$= -\left(\frac{252}{4}\right)$$

$$= -63$$

Hence, the required integer is (-63).

3. Integer divided by $(-9) = -8$

$$\text{Integer} \div (-9) = -8$$

$$\text{Integer} = (-8) \times (-9)$$

$$= +(8 \times 9)$$

$$= 72$$

Hence, the required integer is 72.

4. Profit on selling one pen = ₹ 1 = 100 paise
(₹ 1 = 100 paise)

Profit on selling 40 pens = $100 \times 40 = 4000$ paise
= +4000 (Profit)

Loss on selling one pencil = 30 paise = -30

(loss)

Total loss in particular month

$$= ₹ 5 = 500 \text{ paise} = -500$$

(loss)

Therefore, $4000 + \text{Number of pencils} \times (-30) = -500$

$$\text{Number of pencils} = \frac{4000 + 500}{30}$$

$$\text{Number of pencils} = \frac{4500}{30}$$

$$= 150$$

Hence, shopkeeper sold 150 pencils.

5. The time taken by the elevator to reach -340 m (340 m below) from 20 m above the ground level

$$= (20 + 340) \div 6$$

$$= 360 \div 6$$

$$= 60 \text{ min}$$

$$= 1 \text{ hour}$$

(∵ 1 hour = 60 minutes)

6. Amount in Rajan's bank account = ₹ 6000

One week later, Rajan deposited = ₹ 1500

$$\text{Total amount} = 6000 + 1500 =$$

$$₹ 7500$$

$$\text{and, withdrawal} = ₹ \left(\frac{1}{3} \times 7500 \right)$$

$$= ₹ 2500$$

$$\text{Balance amount after withdraw} = ₹ (7500 - 2500)$$

$$= ₹ 5000$$

7. Quotient = -18, divisor = ?

$$\text{Dividend} = -324$$

$$-324 \div \text{Integer} = -18$$

⇒

$$\text{Integer} = -324 \div (-18)$$

$$= \frac{(-324)}{(-18)} = \frac{324}{18} = 18$$

8. (i) sum is -9

$$-6 + (-3) = -6 - 3$$

$$= -(6 + 3)$$

$$= -9$$

Hence, required pair is (-6, -3).

(ii) difference is -7

$$3 - 10 = 3 - 10$$

$$= -(10 - 3)$$

$$= -7$$

Hence, required pair is (3, 7).

(iii) sum is 0.

$$5 + (-5) = 5 - 5 = 0$$

Hence, required pair is (5, -5).

MCQs

1. $(-9) - (-15) = -9 + 15$

$$= +(15 - 9)$$

$$= +6$$

Hence, Option (c) is correct.

2. $3495 + 3495 \times 9 = 3495 \times (1 + 9)$ (Distributive law)

$$= 3495 \times 10$$

$$= 34950$$

Hence, Option (b) is correct.

3. $(-12) \times 6 - (-12) \times 4$

$$= (-12) \times (6 - 4)$$
 (Distributive law)

$$= (-12) \times 2$$

$$= -(12 \times 2) = -24$$

$$[\because (-) \times (+) = (-)]$$

Hence, Option (d) is correct.

4. $6 - (-8) = 6 + 8$

$$= 14$$

Hence, Option (b) is correct.

5. Other Integer = $(-14) - 20$

$$= -14 - 20$$

$$= -(14 + 20)$$

$$= -34$$

Hence, Option (a) is correct.

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

$$= -(6 + 7)$$

$$= -13$$

Hence, Option (b) is correct.

7. For $c = -1$, 0 and a is satisfied the given condition.

So, Option (a) is correct.

8. $2 - (-3) = 2 + 3$

$$= 5$$

Hence, Option (c) is correct.

9. $-6 - 6 = -(6 + 6)$
 $= -12$
Hence, Option (a) is correct.
10. The smallest integer is not defined.
So, Option (d) is correct.
11. $0 \div (-3) = 0$
Hence, Option (b) is correct.
12. $(-7) \div 0$
it is not defined.
Hence, Option (d) is correct.
13. On subtracting -5 from -7 .
 $-7 - (-5) = -7 + 5$
 $= -(7 - 5) = -2$
Hence, Option (b) is correct.
14. Largest three digit integer = 999
Smallest two digit positive integer = 10
Then, The product = 999×10
 $= 9990$
Hence, Option (b) is correct.
15. Integer = $575 \div (-23)$
 $= \frac{575}{(-23)}$
 $= -\left(\frac{575}{23}\right) = -25$
Hence, Option (c) is correct.

Mental Maths Cornar

- Positive integer.
- negative
- positive
- The Successor of $-175 = -175 + 1$
 $= -174$
- The additive inverse of $7 = -(+7)$
 $= -7$
- $a - 1$
- Other integer = $47 - (-13)$
 $= 47 + 13$
 $= 60$
- positive
- Integer $\div (-6) = 25$
Integer = $25 \times (-6)$
 $= -(25 \times 6)$
 $= -150$

- 0, 1
- a , not defined.
- smaller than

REVIEW EXERCISE

- $\{40 \div (-7)\} \div \{(-48) \div 16\} = (-6) \div \{(-48) \div 16\}$
 $= (-6) \div (-3)$
 $= 2$
- (i) $(6 - 8) \times 10$ and $6 - (8 \times 10)$
 $(6 - 8) \times 10 = (-2) \times 10$
 $= -20$
 $6 - (8 \times 10) = 6 - 80$
 $= -(80 - 6)$
 $= -74$
Thus, $(6 - 8) \times 10 > 6 - (8 \times 10)$
($\because -20 > -74$)
(ii) $(12 + 6) \times 10$ and $12 + (6 \times 10)$
 $(12 + 6) \times 10 = 18 \times 10 = 180$
and $12 + (6 \times 10) = 12 + 60 = 72$
Thus, $(12 + 6) \times 10 > 12 + (6 \times 10)$
($\because 180 > 72$)
(iii) $\{(-3) - 7\} \times (-2)$ and $(-3) - \{7 \times (-2)\}$
 $\{(-3) - 7\} \times (-2) = \{-(3 + 7)\} \times (-2)$
 $= (-10) \times (-2)$
 $= +(10 \times 2) = 20$
 $(-3) - \{7 \times (-2)\} = (-3) - \{-(7 \times 2)\}$
 $= (-3) - (-14)$
 $= (-3) - (-14)$
 $[(-) \times (-) = (+)]$
 $= (-3) + 14$
 $= 11$
Thus, $(-3) - \{7 \times (-2)\} > \{(-3) - 7\} \times (-2)$
[$\because 20 > 11$]
- (i) $23967 \times 99 + 23967$
 $= 23967 \times (99 + 1)$ (Distributive law)
 $= 23967 \times 100$
 $= 2396700$
(ii) $1982 \times 776 - 982 \times 776$
 $= 776 \times (1982 - 982)$ (Distributive law)
 $= 776 \times 1000 = 776000$
(iii) $3764 \times 99 - (-3764)$
 $= 3764 \times \{99 - (-1)\}$ (Distributive law)
 $= 3764 \times (99 + 1)$
 $= 3764 \times 100 = 376400$

4. (i) sum is -5.
There are many pairs whose sum is -5.
like, (-8, 3), etc.
- (ii) difference is -9.
There are many pairs whose difference is -9.
like, (2, 11) etc.
- (iii) sum is 0
There are many pairs whose sum is zero.
like as (6, -6) etc.
- (iv) Product is -15.
There are many pairs whose product is -15.
like as (3, -5), (5, -3) etc.
- (v) Product is 24.
There are many pairs whose product is 24.
like as (3, 8), (2, 12), (6, 4) etc.
- (vi) Quotient is 6.
There are many pairs whose quotient is 6.
like as (12, 2), (18, 3) etc.
- (vii) Quotient is -7.
There are many pairs whose quotient is -7.
like as (-14, 2), (-21, 3) etc.
5. Height of the plane from the sea level = 4500 m
Depth of the submarine below the sea level = 1100 m
Total vertical distance = $(+4500) + (+1100)$
= $4500 + 1100$
= 5600 m

6. Subtract -8 from 15 = $15 - (-8)$
= $15 + 8$
= 23

Now, subtract 15 from -8 = $-8 - (15)$
= $-8 - 15$
= $-(8 + 15)$
= -23

No, both the results are not same.

7. (i) $-15 + (-23) - (-24) + (-17) = -15 - 23 - (-24) + (-17)$
= $-(15 + 23) - (-24) + (-17)$
= $-38 + 24 + (-17)$
= $-(38 - 24) + (-17)$
= $-14 - 17$
= $-(14 + 17)$
= -31

(ii) $(-5) \times (-13) \times (-1) \times 0 \times (-6)$
= $+(5 \times 13) \times (-1) \times 0 \times (-6)$ $[(-) \times (-) = (+)]$
= $+ 65 \times (-1) \times 0 \times (-6)$
= $-(65 \times 1) \times 0 \times (-6)$ $[(+ \times (-) = (-)]$
= $-65 \times 0 \times (-6)$
= $-(65 \times 0) \times (-6)$
= $0 \times (-6)$
= 0

8. (i) 5 negative integers and 3 positive integers.
Whatever may be the number of positive integers. It will not affect the sign of product.
Since, The product of odd number of negative integers is negative. So, 5 is odd.
Hence, the given product is negative.
- (ii) Since, 19 is odd. So the product of 19 negative integers is negative, and any number of positive integer will not affect the sign of product. So, the given product is negative.
- (iii) 12 negative integers and 9 positive integers.
 $21(12 + 9)$ is odd. Hence the product of 12 and 9 negative integers together is negative.
- (iv) 17 positive integers and 6 negative integers.
Since, 6 is even, so, the product of 6 negative integers is positive.
Hence, the product of 17 positive and 6 negative integers together is positive.

HOTS

1. $\frac{\text{Integer} \times (-1)}{(-9)} = \frac{1}{\text{Integer}}$
 $\Rightarrow \frac{-(\text{Integer} \times 1)}{(-9)} = \frac{1}{\text{Integer}}$
 $\Rightarrow (\text{Integer})^2 = 9 = 3^2$
 $\Rightarrow \boxed{\text{Integer} = 3}$

2. $(+1000) + (-1250) + 600 + (-800)$
(\because (+)ve sign = North direction, (-)ve sign = South direction)
= $-(1250 - 1000) + 600 + (-800)$
= $-250 + 600 + (-800)$
= $+(600 - 250) + (-800)$
= $350 + (-800)$
= $-(800 - 350)$
= -450 m
Hence, 450 m south.



Puzzle

Let the five digit be in order a, b, c, d, e .

Now from 1st clue : $e + c = 14$

2nd clue : $1 + b = d$

3rd clue : $a + 1 = 2b$

4th clue : $b + c = 10$

5th clue : $a + b + c + d + e = 30$

Now, from 5th clue,

$$a + (b + c) + d + e = 30$$

$$a + 10 + d + e = 30$$

(4th clue $b + c = 10$)

$$(2b - 1) + 10 + 1 + b + e = 30$$

[$\because a = 2b - 1$ from 3rd clue and $d = 1 + b$ from 2nd clue]

$$(2b - 1) + 10 + 1 + b + (14 - c) = 30$$

[$e = 14 - c$ from 1st clue]

$$2b - 1 + 10 + 1 + b + 14 - 10 + b = 30$$

$$(2b + b + b) + (14 - 10 + 10 - 1 + 1) = 30$$

$$4b + 14 = 30$$

$$4b = 30 - 14$$

$$4b = 16$$

$$\boxed{b = 4}$$

Substituting the value of b in all the clues, we get the code **74658**.

VALUE BASED QUESTION SUMMATIVE ASSESSMENT

Nikita had balloons = 60

Number of balloons distributed to her friends

$$= 60 - 12 = 48$$

- (a) Number of balloons each of her friend gets
= $48 \div 8 = 6$
- (b) Sharing the things to the friends is a good habit. Nikita shows sharing by this gesture.