

NCERT QUESTIONS WITH SOLUTIONS

FIGURE IT OUT-01

1. Fill in the blanks to make the expressions equal on both sides of the = sign:

(a) $13 + 4 = \underline{\quad} + 6$ (b) $22 + \underline{\quad} = 6 \times 5$
 (c) $8 \times \underline{\quad} = 64 \div 2$ (d) $34 - \underline{\quad} = 25$

Sol. (a) $13 + 4 = 17$

$11 + 6 = 17$

Therefore, $13 + 4 = 11 + 6$

(b) Since $6 \times 5 = 30$

$22 + 8 = 30$

Therefore, $22 + 8 = 6 \times 5$

(c) Since $64 \div 2 = 32$

$8 \times 4 = 32$

Therefore, $8 \times 4 = 64 \div 2$

(d) Since $34 - 25 = 9$

Therefore, $34 - 9 = 25$

2. Arrange the following expressions in ascending (increasing) order of their values.

(a) $67 - 19$ (b) $67 - 20$

(c) $35 + 25$ (d) 5×11

(e) $120 \div 3$

Sol. (a) $67 - 19 = 48$

(b) $67 - 20 = 47$

(c) $35 + 25 = 60$

(d) $5 \times 11 = 55$

(e) $120 \div 3 = 40$

Since $40 < 47 < 48 < 55 < 60$

Therefore, $120 \div 3 < 67 - 20 < 67 - 19 < 5 \times 11 < 35 + 25$

Thus, (e) < (b) < (a) < (d) < (c)

FIGURE IT OUT-02

1. Find the values of the following expressions by writing the terms in each case.

(a) $28 - 7 + 8$ (b) $39 - 2 \times 6 + 11$

(c) $40 - 10 + 10 + 10$ (d) $48 - 10 \times 2 + 16 \div 2$

(e) $6 \times 3 - 4 \times 8 \times 5$

Sol. (a) $28 - 7 + 8 = 28 + (-7) + 8$

Terms: 28, -7, and 8

$28 - 7 + 8$

$= 28 + (-7) + 8$

$= 21 + 8 = 29$

(b) $39 - 2 \times 6 + 11 = 39 + (-2 \times 6) + 11$

Terms: 39, -2×6 , and 11

$39 - 2 \times 6 + 11$

$= 39 + (-2 \times 6) + 11$

$= 39 + (-12) + 11$

$= 27 + 11$

$= 38$

(c) $40 - 10 + 10 + 10 = 40 + (-10) + 10 + 10$

Terms: 40, -10, 10, and 10

$40 - 10 + 10 + 10$

$= 40 + (-10) + 10 + 10$

$= 30 + 10 + 10$

$= 40 + 10$

$= 50$

(d) $48 - 10 \times 2 + 16 \div 2 = 48 + (-10 \times 2) + (16 \div 2)$

Terms: 48, -10×2 , $16 \div 2$

$48 - 10 \times 2 + 16 \div 2$

$= 48 + (-10 \times 2) + (16 \div 2)$

$= 48 + (-20) + (8)$

$= 28 + 8 = 36$

(e) $6 \times 3 - 4 \times 8 \times 5 = (6 \times 3) + (-4 \times 8 \times 5)$

Terms: 6×3 , $4 \times 8 \times 5$

$6 \times 3 - 4 \times 8 \times 5$

$= (6 \times 3) + (-4 \times 8 \times 5)$

$= 18 + (-160)$

$= -142$

2. Write a story/situation for each of the following expressions and find their values.

(a) $89 + 21 - 10$ (b) $5 \times 12 - 6$

(c) $4 \times 9 + 2 \times 6$

- Sol.** (a) $89 + 21 - 10$

Story/Situation: Rahul had 89 stickers in his collection. His friend gifted him 21 more stickers for his birthday. Later, Rahul gave 10 of his stickers to his younger sister.

Value: $89 + 21 - 10 = 100$.

(b) $5 \times 12 - 6$

Story/Situation: There are 5 boxes, and each box contains 12 pencils. 6 pencils were removed from the boxes to be given to a friend.

Value: $5 \times 12 - 6 = 54$.

(c) $4 \times 9 + 2 \times 6$

Story/Situation: In a garden, there are 4 rows of flowerbeds, and each row has 9 plants. In another part of the garden, there are 2 rows of trees, and each row has 6 trees.

Value: $4 \times 9 + 2 \times 6 = 48$.

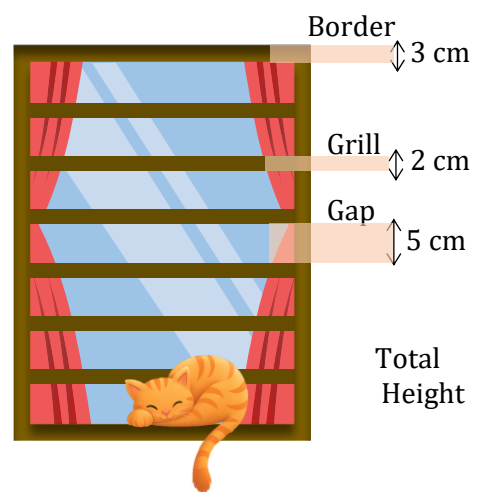
3. For each of the following situations, write the expression describing the situation, identify its terms and find the value of the expression.

- (a) Queen Alia gave 100 gold coins to Princess Elsa and 100 gold coins to Princess Anna last year. Princess Elsa used the coins to start a business and doubled her coins. Princess Anna bought jewellery and has only half of the coins left. Write an expression describing how many gold coins Princess Elsa and Princess Anna together have.

- (b) A metro train ticket between two stations is ₹40 for an adult and ₹20 for a child. What is the total cost of tickets:

- (i) for four adults and three children?
(ii) for two groups having three adults each?

- (c) Find the total height of the window by writing an expression describing the relationship among the measurements shown in the picture.



- Sol.** (a) Number of gold coins Princess Elsa got = 100

Number of gold coins Princess Anna got = 100

Princess Elsa used the coins to start the business and doubled her coins.

So, the number of coins Princess Elsa has = 2×100

Princess Anna bought jewellery and has only half of the coins left.

So, the number of coins Princess

Anna has = $\frac{100}{2}$

Therefore, the total number of gold coins Princess Elsa and Princess

Anna have together = $2 \times 100 + \frac{100}{2}$

Thus, the expression describing the above situation is $2 \times 100 + \frac{100}{2}$

Terms: $2 \times 100, \frac{100}{2}$

Now, $2 \times 100 + \frac{100}{2} = 200 + 50$

= 250 gold coins

- (b) (i) Metro train ticket for an gold coins adult

= ₹ 40

So, the metro train ticket for four adults = 4×40

Metro train ticket for a child = ₹ 20

So, the metro train ticket for three children = 3×20

Therefore, the expression describing the total cost of tickets for four adults and three children is $4 \times 40 + 3 \times 20$

Terms: $4 \times 40, 3 \times 20$

Now, $4 \times 40 + 3 \times 20 = 160 + 60$
= ₹220

- (ii) Metro train ticket for an adult = ₹ 40

So, the metro train ticket for a group of three adults = 3×40

Therefore, the expression describing the total cost of tickets for the two groups having three adults each is $2 \times (3 \times 40)$.

Terms: $2 \times (3 \times 40)$

Now, $2 \times (3 \times 40) = 2 \times 120 = ₹240$

- (c) By observing the given picture, the total height of the window = number of gaps $\times$ 5 cm + number of grills $\times$ 2 cm + number of borders $\times$ 3 cm
= $7 \times 5 + 6 \times 2 + 2 \times 3$
Terms: $7 \times 5, 6 \times 2, 2 \times 3$
Now, $7 \times 5 + 6 \times 2 + 2 \times 3$
= $35 + 12 + 6 = 47 + 6 = 53$ cm

FIGURE IT OUT-03

1. Fill in the blanks with numbers, and boxes with operation signs such that the expressions on both sides are equal.

(a) $24 + (6 - 4) = 24 + 6 \square \square$

(b) $38 + (\square \square \square) = 38 + 9 - 4$

(c) $24 - (6 + 4) = 24 \square 6 - 4$

(d) $24 - 6 - 4 = 24 - 6 \square \square$

(e) $27 - (8 + 3) = 27 \square 8 \square 3$

(f) $27 - (\square \square \square) = 27 - 8 + 3$

Sol. (a) $24 + (6 - 4) = 24 + 6 - 4$

(b) $38 + (9 - 4) = 38 + 9 - 4$

(c) $24 - (6 + 4) = 24 - 6 - 4$

(d) $24 - 6 - 4 = 24 - 6 - 4$

(e) $27 - (8 + 3) = 27 - 8 - 3$

(f) $27 - (8 - 3) = 27 - 8 + 3$

2. Remove the brackets and write the expression having the same value.

(a) $14 + (12 + 10)$ (b) $14 - (12 + 10)$

(c) $14 + (12 - 10)$ (d) $14 - (12 - 10)$

(e) $-14 + 12 - 10$ (f) $14 - (-12 - 10)$

Sol. (a) $14 + (12 + 10)$

= $14 + 12 + 10$

= $14 + 22$

= 36

(b) $14 - (12 + 10)$

= $14 - 12 - 10$

= $14 - 22$

= -8

(c) $14 + (12 - 10)$

= $14 + 12 - 10$

= $14 + 2$

= 16

(d) $14 - (12 - 10)$

= $14 - 12 + 10$

= $14 - 2$

= 12

(e) $-14 + 12 - 10$

= $-14 + 2$

= -12

$$\begin{aligned} \text{(f)} \quad & 14 - (-12 - 10) \\ & = 14 + 12 + 10 \\ & = 14 + 22 \\ & = 36 \end{aligned}$$

3. Find the values of the following expressions. For each pair, first try to guess whether they have the same value. When are the two expressions equal?

- (a) $(6 + 10) - 2$ and $6 + (10 - 2)$
 (b) $16 - (8 - 3)$ and $(16 - 8) - 3$
 (c) $27 - (18 + 4)$ and $27 + (-18 - 4)$

- Sol.** (a) $(6 + 10) - 2$ and $6 + (10 - 2)$
 $(6 + 10) - 2 = 16 - 2 = 14$
 and $6 + (10 - 2) = 6 + 8 = 14$
 Clearly, $(6 + 10) - 2 = 6 + (10 - 2)$
 Hence, the expressions in part (a) have the same value.
 (b) $16 - (8 - 3)$ and $(16 - 8) - 3$
 $16 - (8 - 3) = 16 - 5 = 11$
 and $(16 - 8) - 3 = 8 - 3 = 5$
 $16 - (8 - 3) \neq (16 - 8) - 3$
 Hence, the expressions in part (b) do not have the same value.
 (c) $27 - (18 + 4)$ and $27 + (-18 - 4)$
 $27 - (18 + 4) = 27 - 22 = 5$
 and $27 + (-18 - 4) = 27 + (-22) = 5$
 Clearly, $27 - (18 + 4) = 27 + (-18 - 4)$
 Hence, the expressions in part (c) have the same value.

4. In each of the sets of expressions below, identify those that have the same value. Do not evaluate them, but rather use your understanding of terms.
 (a) $319 + 537$, $319 - 537$, $-537 + 319$, $537 - 319$
 (b) $87 + 46 - 109$, $87 + 46 - 109$, $87 + 46 - 109$, $87 - 46 + 109$, $87 - (46 + 109)$, $(87 - 46) + 109$

Sol. (a)

Expressions	Terms
$319 + 537$	$319, 537$
$319 - 537$	$319, -537$
$-537 + 319$	$319, -537$
$537 - 319$	$-319, 537$

Expressions having the same terms have equal values.

Therefore, $319 - 537$, $-537 + 319$ have the same value.

(b)

Expressions	Terms
$87 + 46 - 109$	$87, 46, -109$
$87 + 46 - 109$	$87, 46, -109$
$87 + 46 - 109$	$87, 46, -109$
$87 - 46 + 109$	$87, -46, 109$
$87 - (46 + 109)$	$87, -46, -109$
$(87 - 46) + 109$	$87, -46, 109$

Expressions having the same terms have equal values.

Therefore, $87 + 46 - 109$, $87 + 46 - 109$, $87 + 46 - 109$ have the same value.

Also, $87 - 46 + 109$ and $(87 - 46) + 109$ have the same value.

5. Add brackets at appropriate places in the expressions such that they lead to the values indicated.

- (a) $34 - 9 + 12 = 13$
 (b) $56 - 14 - 8 = 34$
 (c) $-22 - 12 + 10 + 22 = -22$

Sol. Here, the expressions with correctly placed brackets are

- (a) $34 - (9 + 12) = 13$
 (b) $56 - (14 + 8) = 34$
 (c) $-22 - (12 + 10) + 22 = -22$

6. Using only reasoning of how terms change their values, fill the blanks to make the expressions on either side of the equality (=) equal.

(a) $423 + \underline{\hspace{2cm}} = 419 + \underline{\hspace{2cm}}$

(b) $207 - 68 = 210 - \underline{\hspace{2cm}}$

Sol. Here are the expressions with the correct values bases on reasoning.

(a) $423 + 4 = 419 + 8$

(b) $207 - 68 = 210 - 71$

By analysing how numbers shift, we maintain balance in the equation without direct calculation.

7. Using the numbers 2, 3 and 5, and the operators '+' and '-', and brackets, as necessary, generate expressions to give as many different values as possible. For example, $2 - 3 + 5 = 4$ and $3 - (5 - 2) = 0$.

Sol. Here are different expressions using the numbers, 2, 3 and 5 along with the operators '+' and '-' and brackets

(i) $2 + 3 + 5 = 10$ (ii) $2 + (5 - 3) = 4$

(iii) $(5 + 3) - 2 = 6$ (iv) $5 - (3 + 2) = 0$

(v) $2 - (3 + 5) = -6$

8. Whenever Jasoda has to subtract 9 from a number, she subtracts 10 and adds 1 to it. For example, $36 - 9 = 26 + 1$.

(a) Do you think she always gets the correct answer? Why?

(b) Can you think of other similar strategies? Give some examples.

Sol. (a) Yes, Jasoda always gets the correct answer. Her strategy works because subtracting 10 removes one extra than needed, so adding 1 afterward restores the correct value. Mathematically, her method follows $a - 9 = (a - 10) + 1$ [here, a is any number]

This method is useful because subtracting 10 is often easier to calculate mentally than subtracting 9.

- (b) Similar strategies include

Subtracting 99

Instead of subtracting 99, subtract 100 and add 1

e.g. We have,

$$245 - 99 = (245 - 100) + 1 = 145 + 1 = 146$$

Adding 9

Instead of adding 9, add 10 and subtract 1.

e.g. We have, $37 + 9 = (37 + 10) - 1 = 47 - 1 = 46$

Multiplying by 5

Instead of multiplying by 5, multiply by 10 and divide by 2.

e.g. We have,

$$36 \times 5 = (36 \times 10) \div 2 = 360 \div 2 = 180$$

9. Consider the two expressions:

(a) $73 - 14 + 1$, (b) $73 - 14 - 1$. For each of these expressions, identify the expressions from the following collection that are equal to it.

(i) $73 - (14 + 1)$ (ii) $73 - (14 - 1)$

(iii) $73 + (-14 + 1)$ (iv) $73 + (-14 - 1)$

Sol. Given expressions:

$$73 - 14 + 1 = 60 \text{ and } 73 - 14 - 1 = 58$$

Now,

(i) $73 - (14 + 1) = 73 - 15 = 58$

(ii) $73 - (14 - 1) = 73 - 13 = 60$

(iii) $73 + (-14 + 1) = 73 - 13 = 60$

(iv) $73 + (-14 - 1) = 73 + (-15) = 58$

Hence, expressions (ii) and (iii) are equal to the expression $73 - 14 + 1$, i.e. (a) and expressions (i) and (iv) are equal to the expression $73 - 14 - 1$. i.e. (b)

FIGURE IT OUT-04

1. Fill in the blanks with numbers, and boxes by signs, so that the expressions on both sides are equal.

- (a) $3 \times (6 + 7) = 3 \times 6 + 3 \times 7$
- (b) $(8 + 3) \times 4 = 8 \times 4 + 3 \times 4$
- (c) $3 \times (5 + 8) = 3 \times 5 \square 3 \times \square$
- (d) $(9 + 2) \times 4 = 9 \times 4 \square 2 \times \square$
- (e) $3 \times (\square + 4) = 3 \square + \square$
- (f) $(\square + 6) \times 4 = 13 \times 4 + \square$
- (g) $3 \times (\square + \square) = 3 \times 5 + 3 \times 2$
- (h) $(\square + \square) \times \square = 2 \times 4 + 3 \times 4$
- (i) $5 \times (9 - 2) = 5 \times 9 - 5 \times \square$
- (j) $(5 - 2) \times 7 = 5 \times 7 - 2 \times \square$
- (k) $5 \times (8 - 3) = 5 \times 8 \square 5 \times \square$
- (l) $(8 - 3) \times 7 = 8 \times 7 \square 3 \times 7$
- (m) $5 \times (12 - \square) = \square \square 5 \times \square$
- (n) $(15 - \square) \times 7 = \square \square 6 \times 7$
- (o) $5 \times (\square - \square) = 5 \times 9 - 5 \times 4$
- (p) $(\square - \square) \times \square = 17 \times 7 - 9 \times 7$

- Sol.**
- (a) $3 \times (6 + 7) = 3 \times 6 + 3 \times 7$
 - (b) $(8 + 3) \times 4 = 8 \times 4 + 3 \times 4$
 - (c) $3 \times (5 + 8) = 3 \times 5 + 3 \times 8$
 - (d) $(9 + 2) \times 4 = 9 \times 4 + 2 \times 4$
 - (e) $3 \times (10 + 4) = 30 + 12$
 - (f) $(13 + 6) \times 4 = 13 \times 4 + 24$
 - (g) $3 \times (5 + 2) = 3 \times 5 + 3 \times 2$
 - (h) $(2 + 3) \times 4 = 2 \times 4 + 3 \times 4$
 - (i) $5 \times (9 - 2) = 5 \times 9 - 5 \times 2$
 - (j) $(5 - 2) \times 7 = 5 \times 7 - 2 \times 7$
 - (k) $5 \times (8 - 3) = 5 \times 8 - 5 \times 3$
 - (l) $(8 - 3) \times 7 = 8 \times 7 - 3 \times 7$
 - (m) $5 \times (12 - 3) = 60 - 5 \times 3$
 - (n) $(15 - 6) \times 7 = 105 - 6 \times 7$
 - (o) $5 \times (9 - 4) = 5 \times 9 - 5 \times 4$
 - (p) $(17 - 9) \times 7 = 17 \times 7 - 9 \times 7$

2. In the boxes below, fill '<', '>' or '=' after analysing the expressions on the LHS and RHS. Use reasoning and understanding of terms and brackets to figure this out and not by evaluating the expressions.

- (a) $(8 - 3) \times 29 \square (3 - 8) \times 29$
- (b) $15 + 9 \times 18 \square (15 + 9) \times 18$
- (c) $23 \times (17 - 9) \square 23 \times 17 + 23 \times 9$
- (d) $(34 - 28) \times 42 \square 34 \times 42 - 28 \times 42$

- Sol.**
- (a) $(8 - 3) \times 29 > (3 - 8) \times 29$
Because, $(3 - 8) \times 29 = -(8 - 3) \times 29$
 $\Rightarrow (8 - 3) \times 29 > (3 - 8) \times 29$
 - (b) $15 + 9 \times 18 < (15 + 9) \times 18$
Because, $(15 + 9) \times 18 = 15 \times 18 + 9 \times 18$ and $15 \times 18 > 15$
So, $15 + 9 \times 18 < (15 + 9) \times 18$
 - (c) $23 \times (17 - 9) < 23 \times 17 + 23 \times 9$
Because, $23 \times (17 - 9) = 23 \times 17 - 23 \times 9$
Clearly, $23 \times 17 > 23 \times 17 - 23 \times 9$
 $\Rightarrow 23 \times (17 - 9) < 23 \times 17 + 23 \times 9$
 - (d) $(34 - 28) \times 42 = 34 \times 42 - 28 \times 42$

3. Here is one way to make 14:

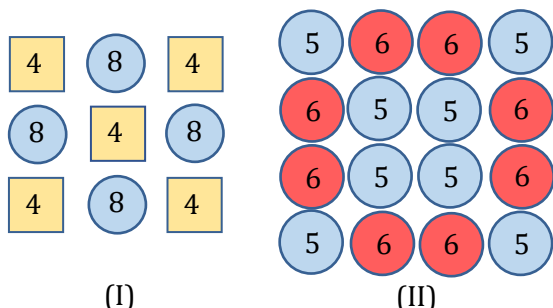
$$2 \times (1 + 6) = 14.$$

Are there other ways of getting 14? Fill them out below:

- (a) $\square \times (\square + \square) = 14$
- (b) $\square \times (\square + \square) = 14$
- (c) $\square \times (\square + \square) = 14$
- (d) $\square \times (\square + \square) = 14$

- Sol.**
- (a) $2 \times (5 + 2) = 14$
 - (b) $2 \times (3 + 4) = 14$
 - (c) $2 \times (4 + 3) = 14$
 - (d) $2 \times (6 + 1) = 14$

4. Find out the sum of the numbers given in each picture below in at least two different ways. Describe how you solved it through expressions.



Sol. For I: $5 \times 4 + 4 \times 8 = 20 + 32 = 52$
 or $4 \times (4 + 8) + 4 = 4 \times 12 + 4 = 52$
 For II: $8 \times (5 + 6) = 8 \times 11 = 88$
 or $8 \times 5 + 8 \times 6 = 40 + 48 = 88$

FIGURE IT OUT-05

1. Read the situations given below. Write appropriate expressions for each of them and find their values.
- (a) The district market in Begur operates on all seven days of a week. Rahim supplies 9 kg of mangoes each day from his orchard and Shyam supplies 11 kg of mangoes each day from his orchard to this market. Find the amount of mangoes supplied by them in a week to the local district market.
- (b) Binu earns ₹20,000 per month. She spends ₹5,000 on rent, ₹5,000 on food, and ₹2,000 on other expenses every month. What is the amount Binu will save by the end of a year?
- (c) During the daytime a snail climbs 3 cm up a post, and during the night while asleep, accidentally slips down by 2 cm. The post is 10 cm high, and a delicious treat is on its top. In how many days will the snail get the treat?

- Sol.** (a) Supplies of mangoes by Rahim in the market each day = 9 kg
 Supplies of mangoes by Shyam in the market each day = 11 kg
 Total supplies of mangoes in the market on each day = $(9 + 11)$ kg
 Therefore, total supplies of mangoes in the market in all 7 days
 $= 7 \times (9 + 11)$ kg
 $= 7 \times 20$
 $= 140$ kg
- (b) Binu's per month earning = ₹ 20,000
 Binu's total monthly expenditures = ₹ 5,000 on rent + ₹ 5,000 on food + ₹ 2,000 on other expenses
 $= 5,000 + 5,000 + 2,000$
 Therefore, Binu's monthly savings
 $= ₹ 20,000 - ₹(5,000 + 5,000 + 2,000)$
 $= ₹ 20,000 - ₹ 12,000$
 $= ₹ 8,000$
 Thus, Binu's total yearly savings
 $= 12 \times 8000 = 96000$
 Hence, Binu will save ₹ 96000 by the end of the year.
- (c) Since the snail climbs 3 cm up the post in daytime and slips down by 2 cm at night.
 So, the distance climbed by the snail of the post = $3 - 2 = 1$ cm in a day.
 $\therefore$ The distance climbed in 7 days = 7 cm
 The height of the post is 10 cm.
 The distance climbed on the 8th day before slipping = $7 + 3 = 10$ cm
 So, the snail will take 8 days to reach the top of the post and get the delicious treat

2. Melvin reads a two-page story every day except on Tuesdays and Saturdays. How many stories would he complete reading in 8 weeks? Which of the expressions below describes this scenario?

- (a) $5 \times 2 \times 8$
- (b) $(7 - 2) \times 8$
- (c) 8×7
- (d) $7 \times 2 \times 8$
- (e) $7 \times 5 - 2$
- (f) $(7 + 2) \times 8$
- (g) $7 \times 8 - 2 \times 8$
- (h) $(7 - 5) \times 8$

Sol. Number of days in a week except Tuesday and Saturday = $7 - 2$

Since Melvin reads a two-page story every day except Tuesday and Saturday. Therefore, number of stories read in a week = $1 \times (7 - 2)$

So, number of stories read in 8 weeks
 $= 8 \times 1 \times (7 - 2)$
 $= 8 \times (7 - 2)$ or $(7 - 2) \times 8$ [Expression (b)]
 or $7 \times 8 - 2 \times 8$ [Expression (g)]

Only expressions (b) and (g) describe this scenario.

3. Find different ways of evaluating the following expressions:

- (a) $1 - 2 + 3 - 4 + 5 - 6 + 7 - 8 + 9 - 10$
- (b) $1 - 1 + 1 - 1 + 1 - 1 + 1 - 1 + 1 - 1$

Sol. (a) $1 - 2 + 3 - 4 + 5 - 6 + 7 - 8 + 9 - 10$
 $= (1 + 3 + 5 + 7 + 9) + (-2 - 4 - 6 - 8 - 10)$
 $= 25 + (-30)$
 $= -5$

OR

$$\begin{aligned} &1 - 2 + 3 - 4 + 5 - 6 + 7 - 8 + 9 - 10 \\ &= (1 - 2) + (3 - 4) + (5 - 6) + (7 - 8) \\ &\quad + (9 - 10) \\ &= (-1) + (-1) + (-1) + (-1) + (-1) \\ &= -5 \end{aligned}$$

(b) $1 - 1 + 1 - 1 + 1 - 1 + 1 - 1 + 1 - 1$
 $= (1 - 1) + (1 - 1) + (1 - 1) + (1 - 1) + (1 - 1)$
 $= 0 + 0 + 0 + 0 + 0$
 $= 0$

OR

$$\begin{aligned} &1 - 1 + 1 - 1 + 1 - 1 + 1 - 1 + 1 - 1 \\ &= (1 + 1 + 1 + 1 + 1) + (-1 - 1 - 1 - 1 - 1) \\ &= 5 + (-5) \\ &= 0 \end{aligned}$$

4. Compare the following pairs of expressions using ' $<$ ', ' $>$ ' or ' $=$ ' or by reasoning.

- (a) $49 - 7 + 8$ $49 - 7 + 8$
- (b) $83 \times 42 - 18$ $83 \times 40 - 18$
- (c) $145 - 17 \times 8$ $145 - 17 \times 6$
- (d) $23 \times 48 - 35$ $23 \times (48 - 35)$
- (e) $(16 - 11) \times 12$ $-11 \times 12 + 16 \times 12$
- (f) $(76 - 53) \times 88$ $88 \times (53 - 76)$
- (g) $25 \times (42 + 16)$ $25 \times (43 + 15)$
- (h) $36 \times (28 - 16)$ $35 \times (27 - 15)$

Sol. (a) $49 - 7 + 8 = 49 - 7 + 8$
 ($\because$ All the terms on both sides are the same)

(b) $83 \times 42 > 83 \times 40$
 $\therefore 83 \times 42 - 18 > 83 \times 40 - 18$

(c) $17 \times 8 > 17 \times 6$
 $\Rightarrow -17 \times 8 < -17 \times 6$
 $\therefore 145 - 17 \times 8 < 145 - 17 \times 6$

$$(d) \ 23 \times (48 - 35) = 23 \times 48 - 23 \times 35$$

$$\text{and } 35 < 23 \times 35 \ 23 \times 48 - 35 > 23 \times (48 - 35)$$

$$(e) \ (16 - 11) \times 12 = 16 \times 12 - 11 \times 12 = -11 \times 12 + 16 \times 12$$

$$\therefore (16 - 11) \times 12 = -11 \times 12 + 16 \times 12$$

$$(f) \ (76 - 53) \times 88 = 76 \times 88 - 53 \times 88 = -(53 - 76) \times 88$$

$$\therefore (76 - 53) \times 88 > 88 \times (53 - 76)$$

$$(g) \ 43 + 15 = 42 + 1 + 15 = 42 + 16$$

$$\Rightarrow 25 \times (43 + 15) = 25 \times (42 + 16)$$

$$\therefore 25 \times (42 + 16) = 25 \times (43 + 15)$$

$$(h) \ 35 \times (27 - 15) = 35 \times (28 - 16)$$

$$\therefore 36 \times (28 - 16) > 35 \times (27 - 15)$$

5. Identify which of the following expressions are equal to the given expression without computation. You may rewrite the expressions using terms or removing brackets. There can be more than one expression which is equal to the given expression.

$$(a) \ 83 - 37 - 12$$

$$(i) \ 84 - 38 - 12$$

$$(ii) \ 84 - (37 + 12)$$

$$(iii) \ 83 - 38 - 13$$

$$(iv) \ -37 + 83 - 12$$

$$(b) \ 93 + 37 \times 44 + 76$$

$$(i) \ 37 + 93 \times 44 + 76$$

$$(ii) \ 93 + 37 \times 76 + 44$$

$$(iii) \ (93 + 37) \times (44 + 76)$$

$$(iv) \ 37 \times 44 + 93 + 76$$

$$\text{Sol. (a) } 83 - 37 - 12 = 83 - 37 - 12 + (1 - 1)$$

$$= (83 + 1) - 37 - 1 - 12$$

$$= 84 - 38 - 12 \text{ (option (i))}$$

$$= 34$$

OR

$$83 - 37 - 12 = -37 + 83 - 12$$

$$= 46 - 12$$

$$= 34 \text{ (option (iv))}$$

Hence, (i) and (iv) are equal to the given expression $83 - 37 - 12$.

$$(b) \text{ (iv) } 37 \times 44 + 93 + 76$$

Rearrange the terms, and we get $93 + 37 \times 44 + 76$, which is equal to the given expression.

Hence, (iv) is equal to the given expression $93 + 37 \times 44 + 76$.

6. Choose a number and create ten different expressions having that value.

Sol. Let us choose number 24 and create ten different expressions having that value

$$i. \ 12 + 12 = 24$$

$$ii. \ 30 - 6 = 24$$

$$iii. \ 8 \times 3 = 24$$

$$iv. \ \frac{48}{2} = 24$$

$$v. \ 25 - 1 = 24$$

$$vi. \ 6 \times 4 = 24$$

$$vii. \ 50 - 26 = 24$$

$$viii. \ 28 - 4 = 24$$

$$ix. \ \frac{240}{10} = 24$$

$$x. \ 5 \times 5 - 1 = 24$$