EXPRESSWALA ACADEMY

Integers

Question Paper, Set 06

Time: 1 hour 30 minutes | Maximum marks: 50

Name: _____ Class: _____ Date: _____

1. Answer all 20 questions. The marks for each question are shown in brackets.
2. Show your working for the 2, 3 and 5 mark questions.
3. The key sheet and worked solutions are at the end of this paper.

1. How many integers are there between -20 and 18? [1 mark]

2. Simplify $-48 - 47$. [1 mark]

3. A diver is 53 m below sea level, that is, at -53 m. She goes down another 49 m. Write her new position as an integer. [2 marks]

4. A lift is at floor -1 (a basement). It goes up 11 floors. At which floor does it stop? [1 mark]

5. Find: (i) $19 + 78$ (ii) $-19 - 78$ (iii) $-19 + 78$ (iv) $19 - 78$ [2 marks]

6. Find: (i) $-53034 + 7398$ (ii) $268 + 3978$ [3 marks]

7. Subtract 909 from 7495. [2 marks]

8. Teja worked out $51231 - 4966$ and got 53735. Is Teja right? If not, write the correct answer. [3 marks]

9. Simplify $-5538 - 636$. [2 marks]

10. Find: (i) $-441 + 394$ (ii) $-692 - 7849$ [3 marks]

11. Find the value of $509 + 16 - 998$. [2 marks]

12. Evaluate $25 - 889 + 76 - 29 + 576 + 69$. [5 marks]

13. Work out 9×-34. [1 mark]

14. Without multiplying, say whether -81×51 is positive or negative. [1 mark]

15. Simplify -65×-917. [3 marks]

16. Find: (i) -45×-57 (ii) -47×888 (iii) 769×-89 [5 marks]

17. Evaluate $\frac{48}{-8}$. [1 mark]

18. Work out $\frac{-4921}{7}$. [2 marks]

19. Find: (i) $\frac{15295}{7}$ (ii) $\frac{-98742}{-7}$ (iii) $\frac{163732}{-2}$ (iv) $\frac{-2484}{9}$ [5 marks]

20. Find: (i) $-26 + 4$ (ii) -26×4 (iii) $-11 - 6$ (iv) -11×-6 (v) $\frac{-38105}{-5}$ [5 marks]

Key sheet

Q	Answer
1	37
2	-95
3	-102 m
4	Floor 10
5	(i) 97, (ii) -97, (iii) 59, (iv) -59
6	(i) -45636, (ii) 4246
7	6586
8	No; $51231 - 4966 = 46265$
9	-6174
10	(i) -47, (ii) -8541
11	-473
12	-172
13	-306
14	Negative
15	59605
16	(i) 2565, (ii) -41736, (iii) -68441
17	-6
18	-703
19	(i) 2185, (ii) 14106, (iii) -81866, (iv) -276
20	(i) -22, (ii) -104, (iii) -17, (iv) 66, (v) 7621

Solutions

1. How many integers are there between -20 and 18? [1]

From -19 to -1: 19 integers

0: 1 integer

From 1 to 17: 17 integers

Total $= 19 + 1 + 17 = 37$

Ans: 37

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2. Simplify $-48 - 47$. [1]

Both are negative: add them and keep the $-$ sign.

$-48 - 47 = -(48 + 47)$

$= -95$

Ans: -95

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3. A diver is 53 m below sea level, that is, at -53 m. She goes down another 49 m. Write her new position as an integer. [2]

Going down is a $-$.

$-53 - 49 = -(53 + 49) = -102$

She is at -102 m, that is, 102 m below sea level.

Ans: -102 **m**

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4. A lift is at floor -1 (a basement). It goes up 11 floors. At which floor does it stop? [1]

Going up adds.

$-1 + 11 = +(11 - 1) = 10$

Ans: Floor 10

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5. Find: (i) $19 + 78$ (ii) $-19 - 78$ (iii) $-19 + 78$ (iv) $19 - 78$ [2]

(i) $19 + 78 = 97$

(ii) $-19 - 78 = -(19 + 78) = -97$

(iii) $-19 + 78 = +(78 - 19) = 59$

(iv) $19 - 78 = -(78 - 19) = -59$

Ans: (i) 97**, (ii)** -97**, (iii)** 59**, (iv)** -59

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6. Find: (i) $-53034 + 7398$ (ii) $268 + 3978$ [3]

Same signs: add and keep the sign. Different signs: subtract and keep the sign of the bigger.

(i) $-53034 + 7398 = -(53034 - 7398) = -45636$

(ii) $268 + 3978 = 4246$

Ans: (i) -45636**, (ii)** 4246

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7. Subtract 909 from 7495. [2]

Write the smaller number under the bigger one and subtract column by column, starting from the units.

Units: $15 - 9 = 6$ (borrow 1)

Tens: $8 - 0 = 8$

Hundreds: $14 - 9 = 5$ (borrow 1)

Thousands: 6

So $7495 - 909 = 6586$

Ans: 6586

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8. Teja worked out $51231 - 4966$ and got 53735. Is Teja right? If not, write the correct answer. [3]

Units: $11 - 6 = 5$ (borrow 1)

Tens: $12 - 6 = 6$ (borrow 1)

Hundreds: $11 - 9 = 2$ (borrow 1)

Thousands: $10 - 4 = 6$ (borrow 1)

Ten thousands: 4

So $51231 - 4966 = 46265$

Teja's answer 53735 is wrong: Teja took the smaller digit from the bigger one in each column instead of borrowing.

Ans: No; $51231 - 4966 = 46265$

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9. Simplify $-5538 - 636$. [2]

Both are negative: add them and keep the $-$ sign.

$-5538 - 636 = -(5538 + 636)$

$= -6174$

Ans: -6174

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10. Find: (i) $-441 + 394$ (ii) $-692 - 7849$ [3]

(i) Different signs and the bigger number 441 is negative, so $-441 + 394 = -(441 - 394)$

Count down: $441 \to 400$ is 41, and $400 \to 394$ is 6

$441 - 394 = 41 + 6 = 47$

So $-441 + 394 = -47$

(ii) Both negative: $-692 - 7849 = -(692 + 7849) = -8541$

Ans: (i) -47**, (ii)** -8541

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11. Find the value of $509 + 16 - 998$. [2]

Positive terms: $509 + 16 = 525$

Negative term: 998

$509 + 16 - 998 = 525 - 998$

$= -(998 - 525) = -473$

Ans: -473

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12. Evaluate $25 - 889 + 76 - 29 + 576 + 69$. [5]

Positive terms: $25 + 76 + 576 + 69 = 746$

Negative terms: $889 + 29 = 918$

$25 - 889 + 76 - 29 + 576 + 69 = 746 - 918$

$= -(918 - 746) = -172$

Ans: -172

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13. Work out 9×-34. [1]

$+ \times - = -$

$9 \times -34 = -(9 \times 34) = -306$

Ans: -306

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14. Without multiplying, say whether -81×51 is positive or negative. [1]

$- \times + = -$

So -81×51 is negative.

Ans: Negative

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15. Simplify -65×-917. [3]

Sign: $- \times - = +$

$917 \times 5 = 4585$

$917 \times 60 = 55020$

$4585 + 55020 = 59605$

So $-65 \times -917 = 59605$

Ans: 59605

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16. Find: (i) -45×-57 (ii) -47×888 (iii) 769×-89 [5]

(i) $- \times - = +$; $57 \times 5 = 285$, $57 \times 40 = 2280$, $285 + 2280 = 2565$

So $-45 \times -57 = 2565$

(ii) $- \times + = -$; $888 \times 7 = 6216$, $888 \times 40 = 35520$, $6216 + 35520 = 41736$

So $-47 \times 888 = -41736$

(iii) $+ \times - = -$; $769 \times 9 = 6921$, $769 \times 80 = 61520$, $6921 + 61520 = 68441$

So $769 \times -89 = -68441$

Ans: (i) 2565**, (ii)** -41736**, (iii)** -68441

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17. Evaluate $\frac{48}{-8}$. [1]

$\frac{+}{-} = -$

$48 \div 8 = 6$, so $\frac{48}{-8} = -6$

Ans: -6

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18. Work out $\frac{-4921}{7}$. [2]

$\frac{-}{+} = -$

$49 \div 7 = 7$; $2 \div 7 = 0$ r 2; $21 \div 7 = 3$

$4921 \div 7 = 703$, so $\frac{-4921}{7} = -703$

Ans: -703

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19. Find: (i) $\frac{15295}{7}$ (ii) $\frac{-98742}{-7}$ (iii) $\frac{163732}{-2}$ (iv) $\frac{-2484}{9}$ [5]

Rule: $\frac{+}{+} = +$, $\frac{-}{-} = +$, $\frac{+}{-} = -$, $\frac{-}{+} = -$

(i) $\frac{+}{+} = +$; $15 \div 7 = 2$ r 1; $12 \div 7 = 1$ r 5; $59 \div 7 = 8$ r 3; $35 \div 7 = 5$; so $\frac{15295}{7} = 2185$

(ii) $\frac{-}{-} = +$; $9 \div 7 = 1$ r 2; $28 \div 7 = 4$; $7 \div 7 = 1$; $4 \div 7 = 0$ r 4; $42 \div 7 = 6$; so $\frac{-98742}{-7} = 14106$

(iii) $\frac{+}{-} = -$; $16 \div 2 = 8$; $3 \div 2 = 1$ r 1; $17 \div 2 = 8$ r 1; $13 \div 2 = 6$ r 1; $12 \div 2 = 6$; so $\frac{163732}{-2} = -81866$

(iv) $\frac{-}{+} = -$; $24 \div 9 = 2$ r 6; $68 \div 9 = 7$ r 5; $54 \div 9 = 6$; so $\frac{-2484}{9} = -276$

Ans: (i) 2185**, (ii)** 14106**, (iii)** -81866**, (iv)** -276

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20. Find: (i) $-26 + 4$ (ii) -26×4 (iii) $-11 - 6$ (iv) -11×-6 (v) $\frac{-38105}{-5}$ [5]

Addition uses the addition rule; multiplication and division use the sign rule.

(i) $-26 + 4 = -(26 - 4) = -22$

(ii) $- \times + = -$, $-26 \times 4 = -104$

(iii) $-11 - 6 = -(11 + 6) = -17$

(iv) $- \times - = +$, $-11 \times -6 = 66$

(v) $\frac{-}{-} = +$; $38 \div 5 = 7$ r 3; $31 \div 5 = 6$ r 1; $10 \div 5 = 2$; $5 \div 5 = 1$; so $\frac{-38105}{-5} = 7621$

Ans: (i) -22**, (ii)** -104**, (iii)** -17**, (iv)** 66**, (v)** 7621