

Integers

Question Paper, Set 01

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. Write the integer that comes just before -54 on the number line. [1 mark]
2. How many jumps of 1 does it take to go from -20 to 23 on the number line? [1 mark]
3. Evaluate $-57 - 16$. [1 mark]
4. A lift is on floor 6. It goes down 10 floors. Write the floor it reaches as an integer. [1 mark]
5. Find: (i) $34 - 81$ (ii) $-56 + 85$ [2 marks]
6. Find: (i) $59 - 824$ (ii) $-984 - 16$ [2 marks]
7. Find: (i) $-2758 - 96474$ (ii) $-305 + 9742$ (iii) $626 + 39$ (iv) $-8135 + 3543$ (v) $155 - 474$ [5 marks]
8. Subtract 336 from 7604. [2 marks]
9. A submarine is at -771 m, that is, 771 m below sea level. It rises 465 m. Find its new position as an integer. [3 marks]
10. Find the value of $-766 - 2506$. [2 marks]
11. Simplify $115 - 866 - 152 + 487$. [3 marks]
12. Evaluate $-77 - 749 + 197 + 66 - 546 + 107$. [5 marks]
13. Without multiplying, say whether -78×93 is positive or negative. [1 mark]
14. Find: (i) 21×7 (ii) -21×-7 (iii) 21×-7 (iv) -21×7 [2 marks]
15. Work out 588×-24 . [3 marks]
16. Find: (i) 36×-72 (ii) -78×-233 (iii) -102×82 [5 marks]
17. Work out $\frac{-81}{-9}$. [1 mark]
18. Find $\frac{4280}{-5}$. [2 marks]
19. Find: (i) $\frac{-86715}{-3}$ (ii) $\frac{148608}{-4}$ [3 marks]

20. Find: (i) $-7 - 21$ (ii) -7×-21 (iii) $-38 + 8$ (iv) -38×8 (v) $\frac{34950}{-6}$

[5 marks]

Key sheet

Q	Answer
1	−55
2	43 jumps
3	−73
4	Floor −4 (a basement)
5	(i) −47, (ii) 29
6	(i) −765, (ii) −1000
7	(i) −99232, (ii) 9437, (iii) 665, (iv) −4592, (v) −319
8	7268
9	−306 m (that is, 306 m below sea level)
10	−3272
11	−416
12	−1002
13	Negative
14	(i) 147, (ii) 147, (iii) −147, (iv) −147
15	−14112
16	(i) −2592, (ii) 18174, (iii) −8364
17	9
18	−856
19	(i) 28905, (ii) −37152
20	(i) −28, (ii) 147, (iii) −30, (iv) −304, (v) −5825

Solutions

1. Write the integer that comes just before -54 on the number line. [1]

Just before means one jump of 1 to the left.

$$-54 - 1 = -(54 + 1) = -55$$

Ans: -55

2. How many jumps of 1 does it take to go from -20 to 23 on the number line? [1]

From -20 to 0 : 20 jumps

From 0 to 23 : 23 jumps

$$\text{Total} = 20 + 23 = 43 \text{ jumps}$$

Ans: 43 jumps

3. Evaluate $-57 - 16$. [1]

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

$$-57 - 16 = -(57 + 16)$$

$$= -73$$

Ans: -73

4. A lift is on floor 6. It goes down 10 floors. Write the floor it reaches as an integer. [1]

Going down subtracts.

$$6 - 10 = -(10 - 6) = -4$$

Ans: Floor -4 (a basement)

5. Find: (i) $34 - 81$ (ii) $-56 + 85$ [2]

Different signs: subtract the smaller from the bigger and keep the sign of the bigger.

$$(i) 34 - 81 = -(81 - 34) = -47$$

$$(ii) -56 + 85 = +(85 - 56) = 29$$

Ans: (i) -47 , (ii) 29

6. Find: (i) $59 - 824$ (ii) $-984 - 16$ [2]

$$(i) 59 - 824 = -(824 - 59) = -765$$

$$(ii) -984 - 16 = -(984 + 16) = -1000$$

Ans: (i) -765 , (ii) -1000

7. Find: (i) $-2758 - 96474$ (ii) $-305 + 9742$ (iii) $626 + 39$ (iv) $-8135 + 3543$ (v) $155 - 474$ [5]

$$(i) -2758 - 96474 = -(2758 + 96474) = -99232$$

$$(ii) -305 + 9742 = +(9742 - 305) = 9437$$

$$(iii) 626 + 39 = 665$$

$$(iv) -8135 + 3543 = -(8135 - 3543) = -4592$$

$$(v) 155 - 474 = -(474 - 155) = -319$$

Ans: (i) -99232 , (ii) 9437, (iii) 665, (iv) -4592 , (v) -319

8. Subtract 336 from 7604. [2]

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

Units: $14 - 6 = 8$ (borrow 1)

Tens: $9 - 3 = 6$ (borrow 1)

Hundreds: $5 - 3 = 2$

Thousands: 7

So $7604 - 336 = 7268$

Ans: 7268

9. A submarine is at -771 m, that is, 771 m below sea level. It rises 465 m. Find its new position as an integer. [3]

Rising adds: the new position is $-771 + 465$

Different signs and the bigger number 771 is negative, so $-771 + 465 = -(771 - 465)$

Count down: $771 \rightarrow 500$ is 271, and $500 \rightarrow 465$ is 35

$$771 - 465 = 271 + 35 = 306$$

So $-771 + 465 = -306$

Ans: -306 m (that is, 306 m below sea level)

10. Find the value of $-766 - 2506$. [2]

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

$$-766 - 2506 = -(766 + 2506)$$

$$= -3272$$

Ans: -3272

11. Simplify $115 - 866 - 152 + 487$. [3]

Positive terms: $115 + 487 = 602$

Negative terms: $866 + 152 = 1018$

$$115 - 866 - 152 + 487 = 602 - 1018$$

$$= -(1018 - 602) = -416$$

Ans: -416

12. Evaluate $-77 - 749 + 197 + 66 - 546 + 107$. [5]

Positive terms: $197 + 66 + 107 = 370$

Negative terms: $77 + 749 + 546 = 1372$

$$-77 - 749 + 197 + 66 - 546 + 107 = 370 - 1372$$

$$= -(1372 - 370) = -1002$$

Ans: -1002

13. Without multiplying, say whether -78×93 is positive or negative. [1]

$$- \times + = -$$

So -78×93 is negative.

Ans: Negative

14. Find: (i) 21×7 (ii) -21×-7 (iii) 21×-7 (iv) -21×7 [2]

$21 \times 7 = 147$; only the sign changes, by the rule.

(i) $+$ $\times$ $+$ $=$ $+$, so $21 \times 7 = 147$

(ii) $-$ $\times$ $-$ $=$ $+$, so $-21 \times -7 = 147$

(iii) $+$ $\times$ $-$ $=$ $-$, so $21 \times -7 = -147$

(iv) $-$ $\times$ $+$ $=$ $-$, so $-21 \times 7 = -147$

Ans: (i) 147, (ii) 147, (iii) -147, (iv) -147

15. Work out 588×-24 . [3]

Sign: $+$ $\times$ $-$ $=$ $-$

$$588 \times 4 = 2352$$

$$588 \times 20 = 11760$$

$$2352 + 11760 = 14112$$

$$\text{So } 588 \times -24 = -14112$$

Ans: -14112

16. Find: (i) 36×-72 (ii) -78×-233 (iii) -102×82 [5]

(i) $+$ $\times$ $-$ $=$ $-$; $72 \times 6 = 432$, $72 \times 30 = 2160$, $432 + 2160 = 2592$

$$\text{So } 36 \times -72 = -2592$$

(ii) $-$ $\times$ $-$ $=$ $+$; $233 \times 8 = 1864$, $233 \times 70 = 16310$, $1864 + 16310 = 18174$

$$\text{So } -78 \times -233 = 18174$$

(iii) $-$ $\times$ $+$ $=$ $-$; $102 \times 2 = 204$, $102 \times 80 = 8160$, $204 + 8160 = 8364$

$$\text{So } -102 \times 82 = -8364$$

Ans: (i) -2592, (ii) 18174, (iii) -8364

17. Work out $\frac{-81}{-9}$. [1]

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

$$81 \div 9 = 9, \text{ so } \frac{-81}{-9} = 9$$

Ans: 9

18. Find $\frac{4280}{-5}$. [2]

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

$$42 \div 5 = 8 \text{ r } 2; 28 \div 5 = 5 \text{ r } 3; 30 \div 5 = 6$$

$$4280 \div 5 = 856, \text{ so } \frac{4280}{-5} = -856$$

Ans: -856

19. Find: (i) $\frac{-86715}{-3}$ (ii) $\frac{148608}{-4}$ [3]

(i) $\frac{-}{-} = +$

$8 \div 3 = 2 \text{ r } 2$; $26 \div 3 = 8 \text{ r } 2$; $27 \div 3 = 9$; $1 \div 3 = 0 \text{ r } 1$; $15 \div 3 = 5$

$86715 \div 3 = 28905$, so $\frac{-86715}{-3} = 28905$

(ii) $\frac{+}{-} = -$

$14 \div 4 = 3 \text{ r } 2$; $28 \div 4 = 7$; $6 \div 4 = 1 \text{ r } 2$; $20 \div 4 = 5$; $8 \div 4 = 2$

$148608 \div 4 = 37152$, so $\frac{148608}{-4} = -37152$

Ans: (i) 28905, (ii) -37152

20. Find: (i) $-7 - 21$ (ii) -7×-21 (iii) $-38 + 8$ (iv) -38×8 (v) $\frac{34950}{-6}$ [5]

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

(i) $-7 - 21 = -(7 + 21) = -28$

(ii) $- \times - = +$, $-7 \times -21 = 147$

(iii) $-38 + 8 = -(38 - 8) = -30$

(iv) $- \times + = -$, $-38 \times 8 = -304$

(v) $\frac{+}{-} = -$; $34 \div 6 = 5 \text{ r } 4$; $49 \div 6 = 8 \text{ r } 1$; $15 \div 6 = 2 \text{ r } 3$; $30 \div 6 = 5$; so $\frac{34950}{-6} = -5825$

Ans: (i) -28, (ii) 147, (iii) -30, (iv) -304, (v) -5825
