

# Contents

## Section I

Overview .....	5
1. Number Theory .....	6
2. Squares and Square Roots .....	8
3. Multiples and Factors .....	10
4. Integers .....	12
5. Decimals .....	16
6. Fractions .....	20
7. Ratios and Rates .....	24
8. Percents .....	26
9. Equations .....	28
Review .....	32

## Section II

Overview .....	35
1. Number Theory .....	36
2. Algebraic Expressions .....	40
3. Fractions .....	44
4. Percents .....	48
5. Measurement .....	52
6. Approximation .....	58
7. Integers .....	60
8. Fractions, Decimals, and Percents .....	64
Midway Test .....	68
9. Coordinates .....	74
10. More about Algebraic Expressions .....	78
11. Angles and Lines .....	84
12. Angles and Shapes .....	88
13. Statistics .....	92
14. Transformations .....	96
15. Probability .....	98
Final Test .....	100

## Section III

Overview .....	107
1. Order of Operations .....	108
2. Applications of Whole Numbers .....	110
3. Squares and Square Roots .....	116
4. Exponents .....	118

5.	Simple Interest .....	120
6.	Percents .....	122
	Midway Review .....	126
7.	Fractions .....	130
8.	Decimals .....	136
9.	Integers .....	140
10.	Patterns .....	144
11.	Linear Equations .....	148
	Final Review .....	152
<b>Section IV</b>		
	Overview .....	157
1.	Perimeter and Area .....	158
2.	Volume and Surface Area .....	164
3.	Congruence and Similarity .....	170
4.	Transformations and Tiling .....	174
	Midway Review .....	180
5.	Data Management .....	184
6.	Analysis of Data .....	190
7.	Probability .....	196
	Final Review .....	202
	<b>Handy Reference</b> .....	207
	<b>Answers</b> .....	209

# 4

## Integers

### EXAMPLES

	Integers with the same signs	Integers with different signs
Addition	$(+5) + (+7) = +12$ ← count 7 forward from +5 $(-5) + (-7) = -12$ ← count 7 backward from -5	$(+5) + (-7) = -2$ ← count 7 backward from +5 $(-5) + (+7) = +2$ ← count 7 forward from -5
Subtraction	$(+5) - (+7) = (+5) + (-7) = -2$ ↓ change '-' to '+' ↑ opposite of +7 $(-5) - (-7) = (-5) + (+7) = +2$ ↓ change '-' to '+' ↑ opposite of -7	$(+5) - (-7) = (+5) + (+7) = +12$ ↓ change '-' to '+' ↑ opposite of -7 $(-5) - (+7) = (-5) + (-7) = -12$ ↓ change '-' to '+' ↑ opposite of +7
Multiplication	$(+5) \times (+7) = +35$ $(-5) \times (-7) = +35$	$(+5) \times (-7) = -35$ $(-5) \times (+7) = -35$
Division	$(+35) \div (+5) = +7$ $(-35) \div (-5) = +7$	$(+35) \div (-5) = -7$ $(-35) \div (+5) = -7$

Circle the integers. Then write their opposites.

- ①    -15    0.04     $\sqrt{5}$     7    -6
- \_\_\_\_\_
- 4  $\frac{1}{2}$     8.1    120    -3.3    29
- \_\_\_\_\_

Write the numbers as integers.

- ② gain 45 kg    \_\_\_\_\_
- ③ withdraw \$200    \_\_\_\_\_
- ④ 12°C below 0°C    \_\_\_\_\_
- ⑤ 140 m above sea level    \_\_\_\_\_
- ⑥ deposit \$35    \_\_\_\_\_
- ⑦ lose 2 kg    \_\_\_\_\_



### HINTS:

- Adding integers:  
Add a positive integer → Count forward  
Add a negative integer → Count backward
- Subtracting integers:  
**1st** Change '-' to '+' and replace the integer after the sign with its opposite.  
**2nd** Add the integers.
- Multiplying integers:  
 $(+) \times (+) = (+)$      $(+) \times (-) = (-)$   
 $(-) \times (-) = (+)$      $(-) \times (+) = (-)$
- Dividing integers:  
 $(+) \div (+) = (+)$      $(+) \div (-) = (-)$   
 $(-) \div (-) = (+)$      $(-) \div (+) = (-)$

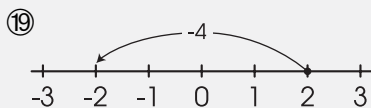
**Write the integers.**

- ⑧ An integer greater than -2 \_\_\_\_\_
- ⑨ An integer less than -5 \_\_\_\_\_
- ⑩ An integer greater than -3 but less than +2 \_\_\_\_\_
- ⑪ An integer between -4 and +3 \_\_\_\_\_
- ⑫ An integer not between 8 and -4 \_\_\_\_\_
- ⑬ The opposite of +6 \_\_\_\_\_
- ⑭ The opposite of -5 \_\_\_\_\_

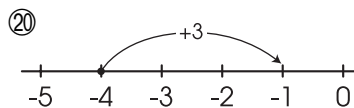
**Write each group of integers in order from least to greatest.**

- ⑮ -14, -38, 19, -4, 6 \_\_\_\_\_
- ⑯ 23, -3, 11, -15, 0 \_\_\_\_\_
- ⑰ 15 m, 16 m, -4 m, -3 m, 2 m \_\_\_\_\_
- ⑱  $-5^{\circ}\text{C}$ ,  $9^{\circ}\text{C}$ ,  $32^{\circ}\text{C}$ ,  $-7^{\circ}\text{C}$ ,  $0^{\circ}\text{C}$  \_\_\_\_\_

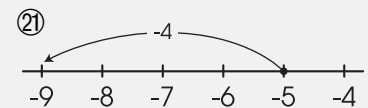
**Check ✓ the correct letter to match each diagram.**



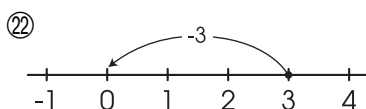
- (A)  $(+2) + (-4)$
- (B)  $(+2) - (-4)$
- (C)  $(+2) + (+4)$



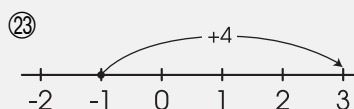
- (A)  $(-4) - (+3)$
- (B)  $(-4) - (-3)$
- (C)  $(-3) + (+4)$



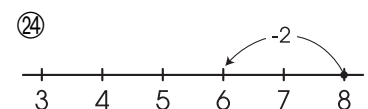
- (A)  $(-5) + (-4)$
- (B)  $(-5) + (+4)$
- (C)  $(-5) - (-4)$



- (A)  $(+3) - (-3)$
- (B)  $(+3) + (-3)$
- (C)  $(+3) + (+3)$

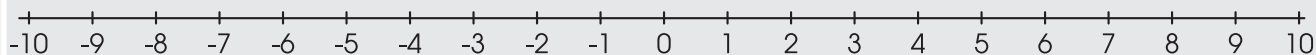


- (A)  $(-1) - (+4)$
- (B)  $(+4) - (-1)$
- (C)  $(-1) + (+4)$



- (A)  $(+8) + (+2)$
- (B)  $(+8) - (-2)$
- (C)  $(+8) + (-2)$

Do the addition with the help of the number line.



⑫  $(+3) + (+6) = \underline{\hspace{2cm}}$

⑫  $(-4) + (-1) = \underline{\hspace{2cm}}$

⑬  $(-8) + (-1) = \underline{\hspace{2cm}}$

⑬  $(-6) + (-4) = \underline{\hspace{2cm}}$

⑭  $(-4) + (-4) = \underline{\hspace{2cm}}$

⑭  $(+7) + (-3) = \underline{\hspace{2cm}}$

⑮  $(-6) + (+7) = \underline{\hspace{2cm}}$

⑮  $(+5) + (-9) = \underline{\hspace{2cm}}$

⑯  $(+3) + (-1) = \underline{\hspace{2cm}}$

⑯  $(-10) + (+3) = \underline{\hspace{2cm}}$

Do the subtraction.

⑳  $(+14) - (+7)$   
 $= (+14) + (-7)$   
 $= \underline{\hspace{2cm}}$

㉑  $(-5) - (-6)$   
 $= (-5) + (+6)$   
 $= \underline{\hspace{2cm}}$

㉒  $(+7) - (-1)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

㉓  $(-7) - (+11)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

㉔  $(-13) - (-2)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

㉕  $(-9) - (+7)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

Circle the parts that you do first. Then find the answers.

①  $(-3) + (-4) + (-5)$   
 $= (-7) + \underline{\hspace{1cm}}$   
 $= \underline{\hspace{2cm}}$

②  $(-1) + (+6) - (-8)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

③  $(+8) - (+12) + (-3)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

④  $(-7) - (-8) - (-9)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

⑤  $(-10) + (-6) - (+4)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

⑥  $(+4) - (-8) + (-3)$   
 $= \underline{\hspace{2cm}}$   
 $= \underline{\hspace{2cm}}$

**Do the multiplication.**

47  $(-5) \times (+4) = \underline{\hspace{2cm}}$

48  $(+7) \times (+9) = \underline{\hspace{2cm}}$

49  $(+6) \times (+7) = \underline{\hspace{2cm}}$

50  $(+2) \times (-3) = \underline{\hspace{2cm}}$

51  $(+4) \times (-9) = \underline{\hspace{2cm}}$

52  $(+4) \times (-10) = \underline{\hspace{2cm}}$

53  $(-6) \times (+6) = \underline{\hspace{2cm}}$

54  $(-6) \times (-3) = \underline{\hspace{2cm}}$

55  $(-2) \times (0) = \underline{\hspace{2cm}}$

56  $(-12) \times (+8) = \underline{\hspace{2cm}}$

**Do the division.**

57  $(-20) \div (-4) = \underline{\hspace{2cm}}$

58  $(+25) \div (-5) = \underline{\hspace{2cm}}$

59  $(-9) \div (+3) = \underline{\hspace{2cm}}$

60  $(+4) \div (+2) = \underline{\hspace{2cm}}$

61  $\frac{(-21)}{(-7)} = \underline{\hspace{2cm}}$

62  $\frac{(-35)}{(+5)} = \underline{\hspace{2cm}}$

63  $\frac{(+68)}{(-17)} = \underline{\hspace{2cm}}$

64  $\frac{(-64)}{(+16)} = \underline{\hspace{2cm}}$

65  $\frac{(-12)}{(+12)} = \underline{\hspace{2cm}}$

66  $\frac{(-2)}{(+1)} = \underline{\hspace{2cm}}$

**Circle the parts that you do first. Then find the answers.**

67  $(-5) - (-2) \times (-4)$   
 $= \underline{\hspace{2cm}} - (+8)$   
 $= \underline{\hspace{2cm}}$

68  $(-10) + (-6) \div (+2)$   
 $=$

69  $(-9) \div (-3) + (-9)$   
 $=$

70  $(-14) \div (-2) + (-6)$   
 $=$

71  $(-4) + (-2) \times (-4)$   
 $=$

72  $(-3) \times (-6) \div (-2)$   
 $=$

73  $(-25) + (-9) \times (-2)$   
 $=$

74  $(-2) - (-12) \div (-6)$   
 $=$

75  $(-8) \div (-4) \times (-10)$   
 $=$