**PRACTICE**

**MATHERMATIC FOR SECONDARY 1**

**CHAPTER 2**

**Integers system**



**Student**

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**Topic**

 **1. Integers**

 **2. Opposites and absolute Value.**

 **3. Comparing and ordering Integers.**

 **4. Adding two positive integers and adding two negative integers.**

 **5. Adding positive integers and negative integers.**

 **6. Subtracting integers.**

 **7. Subtracting two positive integer.**

 **8. Subtracting two negative integer.**

 **9. Subtracting positive integers and negative integers.**

 **10. Multiplying two positive integers.**

 **11. Multiplying two negative integer.**

 **12. Multiplying positive integers and negative integers.**

 **13. Dividing two positive integers.**

 **14. Dividing two negative integers.**

 **15. Dividing positive integer and negative integer.**

 **16. Order of Operation.**

 **17. Properties of integers.**

 **18. Properties of one and zero.**

 **19. word problems.**

2

**Learning Objective**

 **1. What is an integers.**

 **2. To determine the position of an integer on a number line.**

 **3. To understand the symbols >, ≥, <, ≤.**

 **4. To add, subtract, multiply and division of positive and**

 **negative integers.**

 **5. To understand the properties of the four operation.**

 **6. Solve word problems involving integers.**

**Key words**

 **1. Integers จำนวนเต็ม**

 **2. Inequality sign เครื่องหมายไม่เท่ากัน**

 **3. Multiplication การคูณ**

 **5. Less than น้อยกว่า**

 **6. Negative integers จำนวนเต็มลบ**

 **7. Positive integerจำนวนเต็มบวก**

 **8. Zero ศูนย์**

 **9. Positive number จำนวนบวก**

 **10. Positive direction ทิศทางบวก**

 **11. Number line เส้นจำนวน**

 **12. Subtract(minus) การลบ**

 **13. Division การหาร**

 **14. Product ผลลัพธ์**

 **15. Positive sign เครื่องหมายบวก**

 **16. Addition การบวก**

 **17. Negative number จำนวนลบ**

 **18. Operation การดำเนินการ**

**Practice 1**

3

**Integer**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 1. Write an integer for each point on the number line.

 M P J N Q L O K R S

 -6 -4 -2 0 2 4 6

 1) J 2) K

…………………………………………………………….…………… …………………………………………………………………….……

3) L 4) M

…………………………………………………………….…………… …………………………………………………………………….……

5) N 6) P

…………………………………………………………….…………… …………………………………………………………………….……

7) 0 8) Q

…………………………………………………………….…………… …………………………………………………………………….……

9) R 10) S

…………………………………………………………….…………… …………………………………………………………………….……

 2. Give these integers on the number line: -4, 9, 1, -2, 3.

 -12 -10 -8 -6 -4 -2 0 2 4 6 8 10 12 14

 3. Think of the days of a week as integers. Let today be 0, and let days

 in the past be negative and days in the future be positive.

 1) If today is Tuesday, what integer stand for last Sunday?

 ……………………………………………………………………………………………………………………………………………………….…..

 2) If today is Wednesday, what integer stand for next Saturday?

 ……………………………………………………………………………………………………………………………………………………….…..

 3) If today is Friday, what integer stands for last Saturday?

 ……………………………………………………………………………………………………………………………………………………….…..

 4) If today is Monday, what integer stands for next Monday?

 ……………………………………………………………………………………………………………………………………………………….…..

 4. Use a number line to represent each of the following sets of integers.

4

 1) between -9 and 9

 2) from -5 to 8

 3) greater than -1 and less than 6

 4) greater than -7 and less than 7

 5. Complete the following number line.

 1)

 -6 -4 -2 0 2 4 6

 2)

 -12 -8 -4 0 4 8 12

 3)

 -9 -3 0 6

 4)

 0 30

**Practice 2**

5

**Opposites and absolute Value**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 1. Write two numbers that have the given absolute value.

1) 4 2) 38

…………………………………………………………….…………… …………………………………………………………………….……

3) 260 4) 4,092

…………………………………………………………….…………… …………………………………………………………………….……

5) 45 6) 78

…………………………………………………………….…………… …………………………………………………………………….……

7) 280 8) 3,172

…………………………………………………………….…………… …………………………………………………………………….……

9) 7 10) 59

…………………………………………………………….…………… …………………………………………………………………….……

11) 15 12) 90

…………………………………………………………….…………… …………………………………………………………………….……

13) 42 14) 44

…………………………………………………………….…………… …………………………………………………………………….……

 2. Find each absolute value.

1) $\left|-5\right|$ 2) $\left|13\right|$

…………………………………………………………….…………… …………………………………………………………………….……

3) $\left|25\right|$ 4) $\left|-7\right|$

…………………………………………………………….…………… …………………………………………………………………….……

5) $\left|-9\right|$ 6) $\left|14\right|$

…………………………………………………………….…………… …………………………………………………………………….……

7) $-\left|45\right|$ 8) $-\left|-18\right|$

…………………………………………………………….…………… …………………………………………………………………….……

9) $\left|-56\right|$ 10) $-\left|33\right|$

…………………………………………………………….…………… …………………………………………………………………….……

11) $\left|68\right|$ 12) $\left|-5\right|$

…………………………………………………………….…………… …………………………………………………………………….……

13) $-\left|-77\right|$ 14) $\left|99\right|$

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6

 3. Write the opposite of each integer.

1) 16 2) -13

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3) 150 4) 75

…………………………………………………………….…………… …………………………………………………………………….……

5) -1200 6) –(-(-120))

…………………………………………………………….…………… …………………………………………………………………….……

7) 500 8) -790

…………………………………………………………….…………… …………………………………………………………………….……

9) 73 10) -125

…………………………………………………………….…………… …………………………………………………………………….……

11) –(-10,000) 12) 7,500

…………………………………………………………….…………… …………………………………………………………………….……

13) 1,600 14) –(-1,002)

…………………………………………………………….…………… …………………………………………………………………….……

15) –(-(-150)) 16) 95

…………………………………………………………….…………… …………………………………………………………………….……

17) 76 18) –(-(-(-82)))

…………………………………………………………….…………… …………………………………………………………………….……

19) 200 20) 80

…………………………………………………………….…………… …………………………………………………………………….……

21) 53 22) –(-(-(-(-71))))

…………………………………………………………….…………… …………………………………………………………………….……

23) 100 24) 88

…………………………………………………………….…………… …………………………………………………………………….……

25) –(-(-(-73))) 26) –(-96)

…………………………………………………………….…………… …………………………………………………………………….……

27) –(-(-400)) 28) -42

…………………………………………………………….…………… …………………………………………………………………….……

29) -99 30) –(-12)

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**Practice 3**

7

**Comparing and ordering Integers.**

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 1. Arrange the following set of integers in ascending order, starting with

 The smallest number.

1) -3, 2, -5, 0, 22, -7 2) -2, -6, 0, 23, 6

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3) -5, -7, 10, -11, 24, 5, -9 4) 13, 0, 1, -6, -5, 25

…………………………………………………………….…………… …………………………………………………………………….……

5) -3, 2, -5, 27, 5, -6 6) -2, -6, 9, 28, 26

…………………………………………………………….…………… …………………………………………………………………….……

 2. Order each set of integers from smallest to greatest.

1) -3, 2, -5, 6, 5, -1 2) -2, -4, 0, 7, 6

…………………………………………………………….…………… …………………………………………………………………….……

3) -4, -8, 10, -15, 8, 5, -9 4) 13, -4, 9, -6, -5, 11

…………………………………………………………….…………… …………………………………………………………………….……

5) -15, 7, -5, 17, 5, -6 6) -2, -5, 0, 12, 6

…………………………………………………………….…………… …………………………………………………………………….……

 3. Order each set of integers from to greatest to smallest

1) -3, 13, -5, 0, 5, -9 2) -10, -6, 15, 2, 7

…………………………………………………………….…………… …………………………………………………………………….……

3) -2, -7, 16, -11, 3, 5, -12 4) 13, -2, 17, -11, -5, 6

…………………………………………………………….…………… …………………………………………………………………….……

5) -13, 18, -5, 0, 5, -7 6) -2, -14, 19, 2, 8

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 4. Order the temperatures from least to greatest.

 a. The temperature was 25 c๐ below zero.

 b. The pool temperature was 78 c๐.

 c. Water freezes at 32 c๐.

 d. The low temperature in December was -3 c๐.

 e. The temperature in the refrigerator was 34 c๐.

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8

 5. Compare, using < , > or = .

1) -7 -8 2) -3 3

 3) 0 -9 4) -12 -2

5) -7 0 6) 0 -3

7) -5 0 8) 2 -12

9) 6 -18 10) -9 -17

11) $\left|42\right|$ $\left|-93\right|$ 12) $\left|9\right|$ $\left|-13\right|$

13) $\left|6\right|$ $\left|0\right|$ 14) $\left|-53\right|$ $\left|-21\right|$

15) $\left|26\right|$ $\left|-26\right|$ 16) $\left|43\right|$ $\left|-89\right|$

17) $\left|-12\right|$ $\left|10\right|$ 18) $\left|99\right|$ $\left|-55\right|$

19) $\left|-15\right|$ $\left|9\right|$ 20) $\left|-59\right|$ $\left|-34\right|$

 6. Which number in each pair is farther away from zero?

1) 4, -5 2) -32, 15

…………………………………………………………….…………… …………………………………………………………………….……

3) -1, -3 4) -12, 11

…………………………………………………………….…………… …………………………………………………………………….……

5) 9, -8 6) -2, 5

…………………………………………………………….…………… …………………………………………………………………….……

7) 13, -15 8) 9, -5

…………………………………………………………….…………… …………………………………………………………………….……

9) -7, -6 10) -12, 13

…………………………………………………………….…………… …………………………………………………………………….……

11) 6, -5 12) 22, -55

…………………………………………………………….…………… …………………………………………………………………….……

 7. Write an integer that is located on a number line between the given

 integers.

1) -2,………………………………………………….….,9 2) 3, ……………………………………………….…….,-12

3) -7,……………………………………………….…….,-11 4) -25, ………………………………………………….,-16

5) 0, …………………………………………………….,-5 6) 2, ………………………………………………………,-1

 8. Complete with an integer that makes the statement true.

1) -9 > ………………………… 2) 0 > …………………………

3) -1 > ………………………… 4) -50 < …………………………

5) 3 < ………………………… 6) -5 < …………………………

**Practice 4**

9

Adding two positive integers and adding two negative integers.

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 1. Using a number line to add integers.

 **Example** 1. Add the following : 2 + 3 = 5

Move 3 steps to the right ‘(3)’

Start from here ‘2’ answer

 -2 0 2 4 6 8 10

 **Example** 2. Add the following : (-2) + (-3) = -5

Move 3 steps to the left ‘(-3)’

 answer Start from here ‘-2’

 -8 -6 -4 -2 0 2

 1) 3 + 4

 Move …………. steps to the …………………… ‘(………..)’

 2) (-3) + (-4)

 Move …………. steps to the …………………… ‘(………..)’

 3) (-2) + (-5)

 Move …………. steps to the …………………… ‘(………..)’

 2. Fine each sum.

10

1) -2 + (-3) 2) 5 + 9

…………………………………………………………….…………… …………………………………………………………………….……

3) -9 + (-6) 4) 7 + 13

…………………………………………………………….…………… …………………………………………………………………….……

5) -15 + (-3) 6) 24 + 35

…………………………………………………………….…………… …………………………………………………………………….……

7) -31 + (-44) 8) 99 + 21

…………………………………………………………….…………… …………………………………………………………………….……

9) -22 + (-18) 10) 45 + 72

…………………………………………………………….…………… …………………………………………………………………….……

 3. Use >, < or = to complete each statement.

 1) 3 + 9 -2 + (-3) 2) 4 + 6 5 + 5

 3) -5 -3 + (-2) 4) -2 + (-7) (-6) + (-1)

 5) -9 -6 + (-2) 6) 6 + 6 12

 4. Find the value of each of the following

 1) (-2) + (-3) + (-6) 2) 2 + 4 + 6 + 8 + 10 + 12

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…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

 3) (-12) + (-9) + (-21) 4) 7 + 9 + 11 + 12 + 3

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

 5) (-2) + (-4) + (-1) + (-2) 6) 10 + 20 + 30 + 40 + 50

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

7) (-7) + (-9) + (-11) + (-2) + (-1) 8) 2 + 3 + 4 + 5

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 **Practice 5**

11

**Adding positive integers and negative integers**

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 1. Using a number line to add integers.

 **Example** 1. Add the following : (-2) + 3

Move 3 steps to the right ‘(3)’

Start from here ‘2’ answer

 -6 -4 -2 0 2 4 6

 **Example** 2. Add the following : 3 + (-3)

Move 3 steps to the left ‘(-3)’

 answer Start from here ‘3’

 -3 0 3 6

 1) 3 + (-4)

 Move …………. steps to the …………………… ‘(………..)’

 2) (-2) + 5

 Move …………. steps to the …………………… ‘(………..)’

 3) (-6) + 3

 Move …………. steps to the …………………… ‘(………..)’

 2. Fine each sum.

12

1) 2 + (-3) 2) -5 + 9

…………………………………………………………….…………… …………………………………………………………………….……

3) 9 + (-5) 4) 7 + (-10)

…………………………………………………………….…………… …………………………………………………………………….……

5) 15 + (-23) 6) (-24) + 10

…………………………………………………………….…………… …………………………………………………………………….……

7) -31 + 44 8) -99 + 1

…………………………………………………………….…………… …………………………………………………………………….……

9) 20 + (-18) 10) -5 + 12

…………………………………………………………….…………… …………………………………………………………………….……

 3. Use >, < or = to complete each statement.

 1) -3 + 9 4 + (-3) 2) 6 + (-6) -5 + 5

 3) 5 + (-1) 2 + (-2) 4) 2 + (-7) 6 + (-1)

 5) 9 + (-1) -6 + 2 6) 6 + (-6) 12

 4. Find the value of each of the following

 1) (-2) + 3 + (-8) + (-1) 2) 2 + (-4) + 6 + 8 + (-10)

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…………………………………………………………….…………… …………………………………………………………………….……

 3) (-7) + (-9) + 9 + (-2) 4) -7 + (-9) + 2 + (-12) + 1

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

 5) 2 + (-5) + 1 + (-10) 6) -10 + 20 + (-30) + 40 + (-50)

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…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

7) (-8) + (-6) + 11 + (-2) + 1 8) 2 + (-33) + 4 + (-35)

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 **Practice 6**

13

**Subtracting integers**

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 1. To subtract an integer by adding its opposite.

 **Example** 10 – 6 = 10 + (-6) 10 – (-6) = 10 + 6

 -10 – 6 = -10 + (-6) -10 – (-6) = -10 + 6

1) 11-7 2) 11-(-7)

…………………………………………………………….…………… …………………………………………………………………….……

3) -11-7 4) -11-(-7)

…………………………………………………………….…………… …………………………………………………………………….……

5) 6-5 6) 6-(-5)

…………………………………………………………….…………… …………………………………………………………………….……

7) -6-5 8) -6-(-5)

…………………………………………………………….…………… …………………………………………………………………….……

9) 22-13 10) 22-(-13)

…………………………………………………………….…………… …………………………………………………………………….……

11) -22-13 12) -22-(-13)

…………………………………………………………….…………… …………………………………………………………………….……

13) 18-6 14) 18-(-6)

…………………………………………………………….…………… …………………………………………………………………….……

15) -18-6 16) -18-(-6)

…………………………………………………………….…………… …………………………………………………………………….……

17) 4-15 18) 4-(-15)

…………………………………………………………….…………… …………………………………………………………………….……

19) -4-15 20) -4-(-15)

…………………………………………………………….…………… …………………………………………………………………….……

21) 9-3 22) 9-(-3)

…………………………………………………………….…………… …………………………………………………………………….……

23) -9-3 24) -9-(-3)

…………………………………………………………….…………… …………………………………………………………………….……

25) -8-19 26) -9-(-19)

…………………………………………………………….…………… …………………………………………………………………….……

 2. Simplify each expression.

14

1) 13-2 2) 12-(-3)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

3) -11-5 4) -14-(-2)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

5) 15-22 6) 16-(-4)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

7) -17-21 8) -18-(-3)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

9) 6-5 10) 7-(-20)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

11) -15-18 12) -23-(-19)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

13) 19-17 14) 17-(-16)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

15) -16-15 16) -8-(-14)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

17) 9-13 18) 19-(-12)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

19) -14-7 20) -10-(-16)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

21) 20-18 22) 21-(-12)

…………………………………………………………….…………… …………………………………………………………………….……

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**Practice 7**

15

**Subtracting two positive integer. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 1. Using a number line to subtract integers.

 **Example** Subtract the following : 3 - 4

Move 4 steps to the left ‘(3)’

 answer Start from here ‘3’

 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8

 1) 5 - 8

 Move …………. steps to the …………………… ‘(………..)’

 2) 2 - 5

 Move …………. steps to the …………………… ‘(………..)’

 3) 1 - 3

 Move …………. steps to the …………………… ‘(………..)’

4) 6 - 3

 Move …………. steps to the …………………… ‘(………..)’

 2. Calculate each of the following.

16

1) 2 - 3 2) 5 - 8

…………………………………………………………….…………… …………………………………………………………………….……

3) 3 - 5 4) 4 - 7

…………………………………………………………….…………… …………………………………………………………………….……

5) 15 - 21 6) 24 - 10

…………………………………………………………….…………… …………………………………………………………………….……

7) 21 - 44 8) 5 - 1

…………………………………………………………….…………… …………………………………………………………………….……

9) 20 - 18 10) 5 - 6

…………………………………………………………….…………… …………………………………………………………………….……

 3. Use >, < or = to complete each statement.

 1) 3 - 9 4 - 3 2) 6 - 6 5 - 5

 3) 5 – 7 4 4) 2 - 7 6 - 1

 5) 9 – 11 6 - 2 6) 8 - 6 12 - 11

 4. Find the value of each of the following

 1) 22 - 3 - 8 - 1 2) 33 - 4 - 6 - 8 - 9

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…………………………………………………………….…………… …………………………………………………………………….……

 3) 17 - 2 - 4 - 2 4) 7 - 9 - 2 - 11 - 1

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

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 5) 55 - 5 - 10 - 10 6) 10 - 20 - 3 - 4

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

7) 48 - 6 - 22 - 2 - 1 8) 20 - 33 - 4 - 35

…………………………………………………………….…………… …………………………………………………………………….……

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 **Practice 8**

17

**Subtracting two negative integer.**

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 1. Using a number line to subtract integers.

 **Example** Subtract the following : -3 – (-4) = -3 + 4

Move 3 steps to the left ‘(-3)’

 answer Start from here ‘4’

 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

 1) -5 – (-6)

 Move …………. steps to the …………………… ‘(………..)’

 2) -4 – (-7)

 Move …………. steps to the …………………… ‘(………..)’

 3) -8 – (-3)

 Move …………. steps to the …………………… ‘(………..)’

4) -6 – (-2)

 Move …………. steps to the …………………… ‘(………..)’

 2. Calculate each of the following.

18

1) -2 – (-1) 2) -5 – (-2)

…………………………………………………………….…………… …………………………………………………………………….……

3) -3 – (-5) 4) -3 – (-7)

…………………………………………………………….…………… …………………………………………………………………….……

5) -5 – (-21) 6) -10 – (-10)

…………………………………………………………….…………… …………………………………………………………………….……

7) -21 – (-6) 8) -5 – (-9)

…………………………………………………………….…………… …………………………………………………………………….……

9) -20 – (-7) 10) -8 – (-6)

…………………………………………………………….…………… …………………………………………………………………….……

 3. Use >, < or = to complete each statement.

 1) -3 – (-1) -4 – (-3) 2) -6 – (-4) -5 – (-6)

 3) -5 – (-7) -(-2) 4) -2 – (-7) -6 – (-5)

 5) -3 – (-11) -6 – (-2) 6) -8 – (-8) 7 – (-9)

 4. Find the value of each of the following

 1) -20 – (-3) – (-8) – (-1) 2) –(-3) – (-4) – (-2) – (-3) – (-1)

…………………………………………………………….…………… …………………………………………………………………….……

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…………………………………………………………….…………… …………………………………………………………………….……

 3) -15 – (-2) – (-4) 4) –(-5) – (-14) – (-2)

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 5) -5 – (-5) – (-10) 6) -10 – (-12) – (-3)

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7) –(-8) – (-6) 8) –(-20) – (-11)

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 **Practice 9**

19

**Subtracting positive integers and negative integers.**

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 1. Using a number line to subtract integers.

 **Example** Subtract the following : -3 – 4

Move 4 steps to the left ‘(-4)’

 answer Start from here ‘-3’

 -8 -7 -6 -5 -4 -3 -2 -1

 1) -5 – 6

 Move …………. steps to the …………………… ‘(………..)’

 2) 4 – (-6)

 Move …………. steps to the …………………… ‘(………..)’

 3) 8 – (-5)

 Move …………. steps to the …………………… ‘(………..)’

4) -6 – 2

 Move …………. steps to the …………………… ‘(………..)’

 2. Calculate each of the following.

20

1) 2 – (-2) 2) 5 – (-7)

…………………………………………………………….…………… …………………………………………………………………….……

3) -3 – 2 4) -3 - 8

…………………………………………………………….…………… …………………………………………………………………….……

5) 5 – (-25) 6) 4 – (-4)

…………………………………………………………….…………… …………………………………………………………………….……

7) -11 - 7 8) -15 – 9

…………………………………………………………….…………… …………………………………………………………………….……

9) 8 – (-7) 10) 9 – (-11)

…………………………………………………………….…………… …………………………………………………………………….……

 3. Use >, < or = to complete each statement.

 1) 3 – (-4) -4 – 9 2) -6 – 1 5 – (-4)

 3) 5 – (-5) -(-7) 4) -2 – 2 6 – (-4)

 5) 3 – (-6) -8 – 2 6) -8 – 3 1 – (-2)

 4. Find the value of each of the following.

 1) 13 – (-3) – 7 – (-1) 2) –(-3) – (-4) – 8 – (-3) – (-1)

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 3) -15 – 12 – (-4) 4) –(-5) – 9 – (-2)

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 5) -5 – (-5) – 1 6) -10 – 10 – (-3)

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7) –(-8) – 11 8) –(-20) – 2 - 3

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 **Practice 10**

21

**Multiplying two positive Integers**

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 1. Using a number line to multiply integers.

 **Example** Multiply the following : 3 × 2

3 × 2 means three groups of 2 each : 3 × 2 = 6

 Start from here ‘0’ answer

 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8

 1) 3 × 4

 …………………. means ………………… groups of ………….. each : ……………….. = ………………

 2) 4 × 2

 …………………. means ………………… groups of ………….. each : ……………….. = ………………

 3) 5 × 2

 …………………. means ………………… groups of ………….. each : ……………….. = ………………

 2. Using a repeated addition to multiply integers.

22

 Example 2 × 5 = 5 + 5 = 10 mean 2 group of 5

1) 2 × 5

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2) 3 × 7

……………………………………………………………………………………………………………………………………………………….…..

3) 9 × 4 ……………………………………………………………………………………………………………………………………………………….…..

4) 6 × 9

……………………………………………………………………………………………………………………………………………………….…..

5) 3 × 8

……………………………………………………………………………………………………………………………………………………….…..

 3. Use >, < or = to complete each statement.

 1) 9 × 4 4 × 9 2) 6 × 3 5 × 4

 3) 5 × 5 27 4) 2 × 2 6 × 4

 5) 3 × 6 8 × 2 6) 8 × 3 1 × 24

 4. Find the value of each of the following.

 1) 1 × 5 × 6 2) 2 × 5 × 4

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 3) 2 × 3 × 2 4) 3 × 4 × 0

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

 5) 3 × 5 × 1 × 3 6) 4 × 5 × 3 × 1 × 3

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…………………………………………………………….…………… …………………………………………………………………….……

7) 2 × 5 × 2 × 2 8) 2 × 5 × 7

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 **Practice 11**

23

**Multiplying two negative Integers**

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 1. Using a number line to multiply integers.

 **Example** Multiply the following : -3 × (-2)

-3×(-2) as opposites of three groups of -2 : 3×(-2) = -6, -3×(-2) = 6

 Start from here ‘0’ answer

 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6

 1) -2 × (-4)

………………… as opposites of ……………… groups of ……………………………………………………………….

 2) -4 × (-3)

………………… as opposites of ……………… groups of ……………………………………………………………….

 3) -5 × (-2)

………………… as opposites of ……………… groups of ……………………………………………………………….

 2. Find each product.

24

 Example (-2) × (-3) = -[2 × (-3)]

 = -(-6)

 = 6

1) (-2) × (-3) 2) (-4) × (-5)

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 3) (-4) × (-7) 4) (-9) × (-5)

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 5) (-8) × (-2) 6) (-11) × (-3)

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 7) (-7) × (-5) 8) (-2) × (-12)

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9) (-11) × (-4) 10) (-8) × (-6)

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 3. Find the value of each of the following.

 1) -1 × (-5) × (-2) 2) -2 × (-5) × (-2)

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…………………………………………………………….…………… …………………………………………………………………….……

 3) -3 × (-4) × (-2) × (-1) 4) -3 × (-4) × (-5) × (-6)

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 **Practice 12**

25

**Multiplying positive integers and negative integers.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 1. Using a number line to multiply integers.

 **Example** Multiply the following : 3 × 2

3 × (-2) means three groups of -2 each : 3 × (-2) = -6

 answer Start from here ‘0’

 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

 1) -3 × 4

 …………………. means ………………… groups of ………….. each : ……………….. = ………………

 2) 4 × (-2)

 …………………. means ………………… groups of ………….. each : ……………….. = ………………

 3) -5 × 2

 …………………. means ………………… groups of ………….. each : ……………….. = ………………

 2. Using a repeated addition to multiply integers.

26

 Example 2 × (-5) = (-5) + (-5) = -10 mean 2 group of -5

1) -3 × 5

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2) 3 × (-7)

……………………………………………………………………………………………………………………………………………………….…..

3) -7 × 4 ……………………………………………………………………………………………………………………………………………………….…..

4) 6 × (-5)

……………………………………………………………………………………………………………………………………………………….…..

5) -4 × 4

……………………………………………………………………………………………………………………………………………………….…..

 3. Use >, < or = to complete each statement.

 1) 8 × (-4) 4 × (-9) 2) 5 × (-3) 4 × (-4)

 3) -5 × 7 27 4) -2 × 2 5 × (-4)

 5) 3 × (-6) -8 × 2 6) 8 × (-3) -1 × 24

 4. Find the value of each of the following.

 1) 1 × 5 × (-6) 2) 2 × (-5) × 2

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 3) 2 × (-1) × 2 4) 3 × (-4) × 5

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…………………………………………………………….…………… …………………………………………………………………….……

 5) 3 × 5 × (-6) × (-3) 6) 2 × (-5) × 3 × (-1) × 3

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…………………………………………………………….…………… …………………………………………………………………….……

7) -2 × 5 × (-7) × 2 8) 2 × (-5) × (-7)

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 **Practice 13**

27

**Dividing two positive integers**

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 1. Find each quotient.

1) 21 ÷ 21 2) 7 ÷ 7

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3) 50 ÷ 2 4) 15 ÷ 3

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5 441 ÷ 21 6) 19 ÷ 1

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7) 180 ÷ 90 8) 200 ÷ 20

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9) 1,000 ÷ 100 10) 550 ÷ 11

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11) 2262 ÷ 58 12) 9,968 ÷ 89

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13) 10,680 ÷ 120 14) (45 ÷ 3) ÷ 3

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15) 45 ÷ (3 ÷ 3) 16) (48 ÷ 6) ÷ 2

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17) 48 ÷ (6 ÷ 2) 18) (64 ÷ 8) ÷ (8 ÷ 4)

…………………………………………………………….…………… …………………………………………………………………….……

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 2. Find the value of variable.

28

 Example 108 ÷ 12 = x

 x = 9

1) 15 ÷ b = 5 2) (-16) ÷ b = 4

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…………………………………………………………….…………… …………………………………………………………………….……

3) x ÷ 1 = 12 4) 32 ÷ x = 1

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5) (64 ÷ 8) ÷ x = 2 6) x ÷ 4 = 3

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…………………………………………………………….…………… …………………………………………………………………….……

7) h ÷ 2 = 4 8) 7 ÷ 1 = h

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9) 88 ÷ 11 = k 10) (66 ÷ 11) ÷ x = 3

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11) s ÷ 9 = 9 12) 144 ÷ s = 12

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13) (65 ÷ 13) ÷ x = 5 14) f ÷ 9 = 10

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…………………………………………………………….…………… …………………………………………………………………….……

15) 18 ÷ 2 = y 16) (72 ÷ 12) ÷ x = 6

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17) 42 ÷ y = 6 18) x ÷ 7 = 5

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 **Practice 14**

29

**Dividing two negative integers**

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 1. Find each quotient.

1) -64 ÷ (-8) 2) -25 ÷ (-5)

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…………………………………………………………….…………… …………………………………………………………………….……

3) -12 ÷ (-2) 4) -15 ÷ (-3)

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5 -72 ÷ (-1) 6) -28 ÷ (-4)

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7) -100 ÷ (-20) 8) -84 ÷ (-7)

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…………………………………………………………….…………… …………………………………………………………………….……

9) -36 ÷ (-6) 10) -24 ÷ (-3)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

11) -30 ÷ (-10) 12) -81 ÷ (-9)

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…………………………………………………………….…………… …………………………………………………………………….……

13) -56 ÷ (-4) 14) -24 ÷ (-6)

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…………………………………………………………….…………… …………………………………………………………………….……

15) -36 ÷ [(-3) ÷ (-3)] 16) [(-48) ÷ (-12)] ÷ (-2)

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…………………………………………………………….…………… …………………………………………………………………….……

17) -48 ÷ [-12 ÷ (-2)] 18) [(-56) ÷ (-8)] ÷ [(-14) ÷ (-2)]

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

 2. Find the value of variable.

30

 Example x ÷ 7 = 8

 x = 56

1) -30 ÷ b = 5 2) (-16) ÷ b = 4

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…………………………………………………………….…………… …………………………………………………………………….……

3) x ÷ (-3) = 4 4) (-42) ÷ x = 1

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5) [(-24) ÷ (-8)] ÷ x = -1 6) x ÷ (-4) = 3

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…………………………………………………………….…………… …………………………………………………………………….……

7) h ÷ (-2) = 4 8) -13 ÷ (-1) = h

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…………………………………………………………….…………… …………………………………………………………………….……

9) -77 ÷ (-11) = k 10) [-66 ÷ (-11)] ÷ x = -3

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…………………………………………………………….…………… …………………………………………………………………….……

11) s ÷ (-9) = 10 12) -144 ÷ s = 12

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…………………………………………………………….…………… …………………………………………………………………….……

13) [-65 ÷ (-13)] ÷ x = 5 14) f ÷ (-6) = 20

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…………………………………………………………….…………… …………………………………………………………………….……

15) -18 ÷ (-2) = y 16) [-60 ÷ (-12)] ÷ x = -5

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…………………………………………………………….…………… …………………………………………………………………….……

17) -108 ÷ y = 9 18) x ÷ (-4) = 5

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 **Practice 15**

31

**Dividing positive integers and negative integers**

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 1. Find each quotient.

1) 36 ÷ 12 2) 14 ÷ 2

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3) 42 ÷ 3 4) 80 ÷ 20

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5 64 ÷ 8 6) 27 ÷ 9

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7) 96 ÷ 12 8) 195 ÷ 13

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9) 242 ÷ 1 10) 21 ÷ 3

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11) 45 ÷ 5 12) 45 ÷ 9

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

13) 63 ÷ 7 14) (121 ÷ 11) ÷ 11

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

15) 42 ÷ (12 ÷ 2) 16) (63 ÷ 7) ÷ 3

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

17) 21 ÷ (6 ÷ 2) 18) (48 ÷ 4) ÷ (8 ÷ 2)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

 2. Find the value of variable.

32

 Example x ÷ 3 = 4

 x = 12

1) 25 ÷ b = -5 2) (-36) ÷ b = -4

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

3) x ÷ 5 = -12 4) (-42) ÷ x = -1

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

5) (-64 ÷ 8) ÷ x = 2 6) x ÷ 4 = -30

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

7) h ÷ 2 = -12 8) 33 ÷ (-1) = h

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

9) -99 ÷ 11 = k 10) (108 ÷ 12) ÷ x = -3

…………………………………………………………….…………… …………………………………………………………………….……

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11) s ÷ 6 = -6 12) -200 ÷ s = 10

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…………………………………………………………….…………… …………………………………………………………………….……

13) [(40 ÷ (-10)] ÷ x = 2 14) f ÷ 8 = -10

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

15) 72 ÷ (-8) = y 16) (-72 ÷ 12) ÷ x = 6

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…………………………………………………………….…………… …………………………………………………………………….……

17) -48 ÷ y = -6 18) x ÷ 7 = -4

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 **Practice 16**

33

**Order of Operations.**

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 1. Find the value of each expression.

1) (8 + 2) x 9 2) 5 – 1 ÷ 4

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3) (6 + 3) ÷ 3 4) 80 – 6 x 7

…………………………………………………………….…………… …………………………………………………………………….……

5) 4 x 6 + 3 6) 4 x (6 + 3)

…………………………………………………………….…………… …………………………………………………………………….……

7) 35 – 6 x 5 8) 15 ÷ 3 + 6

…………………………………………………………….…………… …………………………………………………………………….……

9) (2 + 2) x 9 10) 9 – 1 ÷ 4

…………………………………………………………….…………… …………………………………………………………………….……

11) (6 + 6) ÷ 4 12) 100 – 6 x 7

…………………………………………………………….…………… …………………………………………………………………….……

13) 4 x 2 + 3 14) 4 x (5 + 3)

…………………………………………………………….…………… …………………………………………………………………….……

15) 30 – 6 x 5 16) 30 ÷ 3 + 6

…………………………………………………………….…………… …………………………………………………………………….……

17) (8 + 2) x 5 18) 10 – 2 ÷ 4

…………………………………………………………….…………… …………………………………………………………………….……

19) (16 + 4) ÷ 5 20) 20 – 5 x 5

…………………………………………………………….…………… …………………………………………………………………….……

21) 4 x 5 + 13 22) 8 x (6 + 3)

…………………………………………………………….…………… …………………………………………………………………….……

23) 15 – 4 x 5 24) 35 ÷ 5 + 6

…………………………………………………………….…………… …………………………………………………………………….……

25) 44 – 6 x 1 26) 12 ÷ 3 + 6

…………………………………………………………….…………… …………………………………………………………………….……

 2. Evaluate each of the following.

34

1) [(120 – 12) × (26 + 14)] ÷ 8

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2) {[(85 – 50) ÷ 7 + 39] ÷ 11 + 166} ÷ 17

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3) 27 ÷ [(84 – 30) ÷ 18] × 61

……………………………………………………………………………………………………………………………………………………….…..

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4) 17 + (31 – 19) × 5 – [3 × (9 + 15) – 108 ÷ (47 – 38)]

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5) {[(84 – 63) ÷ 3 × 4] – 9 × 2} ÷ 5

……………………………………………………………………………………………………………………………………………………….…..

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 **Practice 17**

35

**Properties of integers.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 1. Find the missing numbers. Then simplify.

 1) 5(9 + 6) = 5(….……) + 5(….……)

2) 7 + (a + 3) = (7 + …………..) + 3

 3) x + (6 + a) = (x + 6) + ………………..

 4) (-3) + (b + c) = (b - ……………..) + c

 5) (-3) × 6 = ……………… × (-3)

 6) 7 × (p × 3) = (7 × ……………) × 3

 7) 2(3 + ……………..) = (2 × 3) + (2 × 5)

 8) (……………. – 5)a = (12 × a) – (5 × a)

 9) (-2)(3 – b) = (-2 × 3) – (……………× b)

 10) (5 × 200) + (5 × 30) + 5 = 5(200 + 30 + ……………)

 11) 25 × 36 = (25 × ……………..) – (25 × 4)

 12) 39 × 15 = (40 + …………….) × 15

 13) (9 – 6 + 3) × 7 = (9 × 7) + (………….. × 7) + (3 × 7)

 14) (4a + 4b – 4c) = 4(a +…………………….)

 2. Find the value of variable.

36

1) (6 × 5) + (6 + 1) = 6 + a

……………………………………………………………………………………………………………………………………………………….…..

2) (17 × 9) – (8 × 9) = a × 9

……………………………………………………………………………………………………………………………………………………….…..

3) a × 253 = (-7 × 200) + (-7 × 50) + (-7 × 3)

……………………………………………………………………………………………………………………………………………………….…..

4) 236 × 27 = (200 × 27) + (40 × 27) – (a × 27)

……………………………………………………………………………………………………………………………………………………….…..

5) (12 × 55) + (12 × a) = 12 × 100

……………………………………………………………………………………………………………………………………………………….…..

6) (12 × a) – (12 × 136) = 12 × 300

……………………………………………………………………………………………………………………………………………………….…..

7) 25 × 24 = (25 × 20) + (25 × a)

……………………………………………………………………………………………………………………………………………………….…..

8) 36 × 283 = (36 × 300) + (36 × a) – (36 × 3)

……………………………………………………………………………………………………………………………………………………….…..

9) 39 × 15 = (40 + a) × 15

……………………………………………………………………………………………………………………………………………………….…..

10) (9 – 6 + 3) × 7 = (9 × 7) + (a × 7) + (3 × 7)

……………………………………………………………………………………………………………………………………………………….…..

11) 25 × 30 = (25 × a) – (25 × 4)

……………………………………………………………………………………………………………………………………………………….…..

12) (12 × a) – (12 × 200) = 12 × 300

……………………………………………………………………………………………………………………………………………………….…..

13) 20 × 24 = (20 × 12) + (20 × a)

……………………………………………………………………………………………………………………………………………………….…..

14) (5 × 200) + (5 × 30) + 5 = 5(200 + 30 + a)

……………………………………………………………………………………………………………………………………………………….…..

15) (-3) × 6 = a × (-3)

……………………………………………………………………………………………………………………………………………………….…..

 **Practice 18**

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**Properties of one and zero.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 1. Find each following.

1) 0 + (-21) 2) 480 + 0

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

3) (-12) × 0 4) 7 + (-7)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

5 (-25) × 1 6) 1 × 52

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

7) 0 ÷ (-20) 8) (-9) ÷ 1

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

9) 13 ÷ 13 10) (-42) ÷ (-42)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

11) 45 ÷ 45 12) -72 ÷ (-72)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

13) (-20) × 1 14) 1 × 82

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

15) (-52) × 0 16) 11 + (-11)

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

17) a ÷ a then a ≠ 0 18) (-a) ÷ a then a ≠ 0

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

 2. Find the value of p.

38

1) 3p = 0 2) p × (-7) = 0

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

3) p × 1 = 5 4) 3 + p = 3

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

5) p + (-9) = 0 6) 3 + p = 0

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

7) 9p = 0 8) 0 × p = 0

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

9) -99 ÷ 1 = p 10) p × (-6) = 0

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

11) p × 1 = 8 12) 13 + p = 13

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

13) p + (-19) = 0 14) 23 + p = 0

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

15) 99p = 0 16) 0 × 3 = p

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

17) 4 × 1 = p 18) -90 ÷ 1 = p

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

19) -72 ÷ p = -72 20) 23 + 1 = p

…………………………………………………………….…………… …………………………………………………………………….……

…………………………………………………………….…………… …………………………………………………………………….……

 **Practice 19**

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 **word problems.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 1. The temperature in the chiller section of the AB Supermarket is 3 $℃$

Below the freezing point of water (which is 3 $℃$).

 a) How do you record the temperature?

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 b) A manager of AB Supermarket lowers the temperature by another

 2 $℃$ . What is the new temperature?

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 2. The temperature in the chiller section of the AB Supermarket is 3 $℃$

 At 7.00 am. At 8.00 am, the temperature drops by 5 $℃$ What is the

 new temperature?

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 3. Mr. Kitti stands on a hill which is 90 cm above sea level. He climbs

 down 120 m. At what height above sea level is he now?

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 4. A milk factory in New Zealand, there is a cold room for storing milk.

 On a certain day, the temperature outside was 29 $℃$ . The temperature

 of the cold room was 33 $℃$ colder than the temperature outside.

 What was the temperature of the cold room?

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 5. A refrigerating machine is set to lower its temperature by 5 $℃$

40

 Every hour.

 a) If the temperature at noon is 2 $℃ $, what was the temperature 2

Hours earlier, at 10 am?

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 b) What will the temperature be at 2 pm.

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 c) When will the temperature reach -23 $℃$

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 6. A lift goes up and down a multi-story building. Assuming that the

 ground level is level 0, which level is reached if the lift travels

 a) 6 floors up from level 2

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 b) 8 floors up from level -3

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 c) 5 floors down from level 4

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

 d) 3 floors down from level 1

……………………………………………………………………………………………………………………………………………………….…..

……………………………………………………………………………………………………………………………………………………….…..

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