



Jakarta International  
School  
7<sup>th</sup> Grade

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score:

40

**Practice Test - Black**

Algebraic Expressions and Integers

**Clearly show required work. Check Carefully!**

1. An airplane starts off on a trip with all engines running. It flies at 900 km per hour. Then after it has been flying for  $x$  hours, the pilot shuts down one engine to conserve fuel. The speed is reduced to 700 km/h. The plane flies for a total of 3 hours. (3)

a) Write an expression for the time flown at 700 km/h.

b) Write an expression for the distance flown at 700 km/h.

c) Write an expression for the distance flown at 900 km/h.

2. Suppose that you turn on the hot water, which flows at 8.7 liters per minute into the bathtub. Two minutes later you also turn on the cold water, which flows at 13.2 liters per minute. Let  $x$  be the number of minutes since you turned on the cold water. (3)

a) Write an expression for the number of minutes the hot water has been running.

b) Write an expression for the number of liters the hot faucet has delivered.

c) Write an expression for the number of liters the cold faucet has delivered.

3. a) 5 less than the quotient of 10 and the product of 2 and a number, all multiplied by the same number. (2)

4. Insert an operation symbol for addition, subtraction, multiplication, or division in each blank to make the statement true. (2)

$$60 \underline{\quad} (4 \underline{\quad} 6) \underline{\quad} 5 \underline{\quad} 3 = 65$$

5. Evaluate the expression when  $x = 8$ ,  $y = x-13$  and  $z = -y(x+12)$   
Show your steps for full value. (3)

$$z \div 50\% \text{ of } |10y| - \frac{|y| + 18 \div 2}{23 - 2x} + (x - 4)!$$

6. The expression  $2n+3$  describes a positive integer  $m$  in terms of  $n$ . If  $d=4n$ , express  $m$  in terms of  $d$ . (2)

7. What is the value of the following expression where all the whole numbers 1-99 are included and the repeated operations are add, add, subtract? (2)

$$0+1+2-3+4+5-6+7+8-9+\dots+97+98-99$$

8. Tell whether  $x$  is a positive integer or a negative integer. (2)

$$-x = -|x|$$

9. Absolute value relates to distance. Solve the following equation. Draw a diagram on a number line to support your answer. (3)

$$|(-4) - n| = 5$$

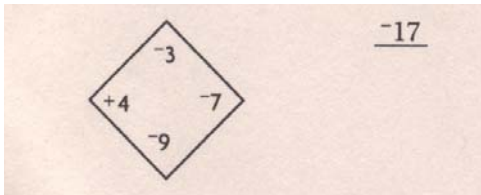
10. In the statement,  $a$  and  $b$  are nonzero integers. Explain what must be true about the values of  $a$  and  $b$ . (2)

$$|a + b| = |a| + |b|$$

11. The variables  $a$  and  $b$  are integers. Tell whether the value of the expression is positive, negative or could be either under the given conditions. (2)

$$|b| - a \quad \text{given that} \quad b < a$$

12. Each diamond has four integers. If you perform three different operations on these integers, you will produce the underlined amount. (3)



- A. \_\_\_\_\_  
B. \_\_\_\_\_  
C. \_\_\_\_\_

13. What can be determined about the signs of  $x$  and  $y$  if  $(x,y)$  lies.... (4)

- a) in the second quadrant  
b) on the  $y$ -axis below the origin

14. Two lines defined by the equations  $y = mx + 6$  and  $y = \frac{1}{2}x + b$ , where  $m$  and  $b$  are constants, intersect at the point  $(-2, 4)$ . What is the value of  $b + m$ ? (2)

15. If a coordinate plane were placed on top of the map of “Math City”, Algebra Lane would go through the points  $(-2, 6)$  and  $(2, -2)$ . Geometry Boulevard runs perpendicular to Algebra Lane and passes through the points  $(4, 4)$  and  $(-4, y)$ . What is the value of  $y$ ? (2)

16. Use a table of values to graph the equations mentioned in the following problem. Then, answer the question. (3)

What is the number of square units in the area of the region bounded by the graphs of  $y = |x| + 2$  and  $y = -|x| + 8$  ?