Name: _____ Class: _____ Date: _____ ID: A

Multiplication of Integers

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Write a multiplication expression for $(-6) + (-6) + (-6)$.
a. -18 b. $(-3) \times (-6)$ c. $(+3) \times (-6)$ d. $+18$

____ 2. Write a multiplication expression for $(-14) + (-14) + (-14) + (-14) + (-14)$.
a. $(+5) \times (-14)$ b. $(-5) \times (-14)$ c. -70 d. $+70$

____ 3. ☐ This tile models +1. ■ This tile models −1.

I have 13 sets of 3 black tiles. What integer do these tiles represent?
a. +39 b. −39 c. +16 d. +10

____ 4. ☐ This tile models +1. ■ This tile models −1.

Jon gave Alicia 5 sets of 10 (+1)-tiles.
How many, and in what colour, are the tiles that Alicia received?
a. 15 black tiles b. 50 black tiles c. 15 white tiles d. 50 white tiles

____ 5. Find the product $(+5) \times (-9)$. Use a number line if necessary.
a. -45 b. $+45$ c. $+14$ d. -4

____ 6. Find this product. $(+5)(-3)$
a. -13 b. -17 c. -15 d. $+25$

____ 7. Find this product. $(-6)(+5)$
a. -30 b. -32 c. -28 d. $+25$

____ 8. Find this product. $(-7)(-4)$
a. $+26$ b. $+27$ c. $+30$ d. $+28$

____ 9. Use the integers $+4$, -6, $+5$, $+8$, and -7.
Which 2 integers have the least product?
a. $(-6) \times (-7)$ b. $(+8) \times (-7)$ c. $(+4) \times (-6)$ d. $(+4) \times (+5)$

____ 10. Which of these products are positive?
i) $(+3)(-8)(+9)$
ii) $(-4)(+9)(-8)$
iii) $(-8)(-9)(+4)$
iv) $(-3)(-9)(-4)$
a. i and iv b. ii and iii c. ii, iii, and iv d. i and ii

Problem

11. Find the product $(+5) \times (-6) + (+5) \times (-6) + (+5) \times (-6)$. Show your work.

12. ☐ This tile models +1. ■ This tile models −1.

    A box contains 7 sets of 4 black tiles. Another box contains 2 sets of 4 white tiles.
    If all the tiles are grouped together, what integer do the tiles represent? Explain your work.

13. The product of 3 integers is −24. The sum of the integers is −12.
    What are the 3 integers? Show your work.

14. Explain how you could predict the sign of the product $(-8)(+9)(+7)(-4)$ without actually multiplying.

Multiplication of Integers
Answer Section

MULTIPLE CHOICE

1. ANS: C PTS: 1 DIF: Easy
   REF: 2.1 Using Models to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
2. ANS: A PTS: 1 DIF: Easy
   REF: 2.1 Using Models to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
3. ANS: B PTS: 1 DIF: Easy
   REF: 2.1 Using Models to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
4. ANS: D PTS: 1 DIF: Easy
   REF: 2.1 Using Models to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
5. ANS: A PTS: 1 DIF: Easy
   REF: 2.1 Using Models to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
6. ANS: C PTS: 1 DIF: Easy
   REF: 2.2 Developing Rules to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
7. ANS: A PTS: 1 DIF: Easy
   REF: 2.2 Developing Rules to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
8. ANS: D PTS: 1 DIF: Easy
   REF: 2.2 Developing Rules to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
9. ANS: B PTS: 1 DIF: Moderate
   REF: 2.2 Developing Rules to Multiply Integers LOC: 8.N7
   TOP: Number KEY: Conceptual Understanding
10. ANS: B PTS: 1 DIF: Moderate
    REF: 2.2 Developing Rules to Multiply Integers LOC: 8.N7
    TOP: Number KEY: Conceptual Understanding

PROBLEM

11. ANS:

$$\begin{aligned}(+5)\times(-6)+(+5)\times(-6)+(+5)\times(-6) &= (-30)+(-30)+(-30)\\ &= (+3)\times(-30)\\ &= -90\end{aligned}$$

PTS: 1 DIF: Difficult REF: 2.1 Using Models to Multiply Integers
LOC: 8.N7 TOP: Number KEY: Procedural Knowledge | Communication

12. ANS:
First box contains $7 \times 4 = 28$ black tiles. They represent -28.
Second box contains $2 \times 4 = 8$ white tiles. They represent $+8$.
The integer is: $(-28) + (+8) = -20$

PTS: 1 DIF: Difficult REF: 2.1 Using Models to Multiply Integers
LOC: 8.N7 TOP: Number KEY: Conceptual Understanding | Communication

13. ANS:
Methods may vary. Sample:
Find 3 natural numbers that have a product of 24.
There are 6 possible sets:
1, 1, 24; 1, 2, 12; 1, 3, 8; 1, 4, 6; 2, 2, 6; 2, 3, 4
Since the product of the 3 integers is negative, 1 or all 3 of the integers are negative.
$(-2)(-4)(-6) = -24$
$(-2) + (-4) + (-6) = -12$
So, the 3 integers are -2, -4, and -6.

PTS: 1 DIF: Difficult REF: 2.2 Developing Rules to Multiply Integers
LOC: 8.N7 TOP: Number KEY: Communication | Problem-solving Skills

14. ANS:
The sign of the product $(-8)(+9)(+7)(-4)$ is positive.
Explanations may vary. Sample:
There are 2 negative factors in the product. Their product is positive.
The product of any number of positive integers is always positive.
So, the sign of the product $(-8)(+9)(+7)(-4)$ is positive.

PTS: 1 DIF: Difficult REF: 2.2 Developing Rules to Multiply Integers
LOC: 8.N7 TOP: Number KEY: Communication | Problem-solving Skills