Pre-algebra
Skill-Builder # I – 3
Multiplying Integers

We have the following rules for integer multiplication:

$(+)\cdot(+)=(+)$	positive $\times$ positive $=$ positive
$(-)\cdot(-)=(-)$	negative $\times$ negative $=$ positive
$(+)\cdot(-)=(-)$	positive $\times$ negative $=$ negative
$(-)\cdot(+)=(-)$	negative $\times$ positive $=$ negative

Examples

1) $3\cdot(-5)=-15$

2) $(-4)(-6)=24$

3) $-7\cdot9=-63$

4) $-(-3)\cdot(-2)=3\cdot(-2)=-6$

When multiplying more than two integers one can work from left to right:
5)

$$4\cdot(-2)\cdot(-1)\cdot(-2)$$

$$=\quad -8\cdot(-1)\cdot(-2)$$

$$=\quad\quad 8\cdot(-2)$$
$$=\quad\quad -16$$

6)

$$(-3)\cdot5\cdot(-1)\cdot(-2)\cdot(-1)$$

$$=\quad -15\cdot(-1)\cdot(-2)\cdot(-1)$$

$$=\quad\quad 15\cdot(-2)\cdot(-1)$$

$$=\quad\quad\quad -30\cdot(-1)$$
$$=\quad\quad\quad\quad 30$$

Note: Example 5 has three negative factors and the product is negative, while
   example 6 has four negative factors and the product is positive.
   We can generalize this to any number of negative factors:

> ***The product of an odd number of negative factors is negative.***
> ***The product of an even number of negative factors is positive.***

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Find the product.

1) $4 \cdot (-5)$

2) $-6 \cdot 5$

3) $-7 \cdot (-3)$

4) $-4 \cdot (-9)$

5) $(-5)(-8)$

6) $(-8)(-10)$

7) $(3)(-9)$

8) $(-6)(9)$

9) $6 \cdot (-3) \cdot (-2)$

10) $-5 \cdot (-2) \cdot (5)$

11) $8 \cdot (-1) \cdot (-2) \cdot (-2)$

12) $-4 \cdot 5 \cdot (-3) \cdot (-1)$

13) $-(-1)(2)(-3)(-2)$

14) $-(-4)(-1)(-2)(10)$

15) $2 \cdot (-5) \cdot (-1) \cdot (-2) \cdot (-1)$

16) $-4 \cdot 3 \cdot (-1) \cdot (-2) \cdot (-2) \cdot (-1)$

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Answer Key:

1) −20

2) −30

3) 21

4) 36

5) 40

6) 80

7) −27

8) −54

9) 36

10) 50

11) −32

12) −60

13) 12

14) 80

15) 20

16) −48