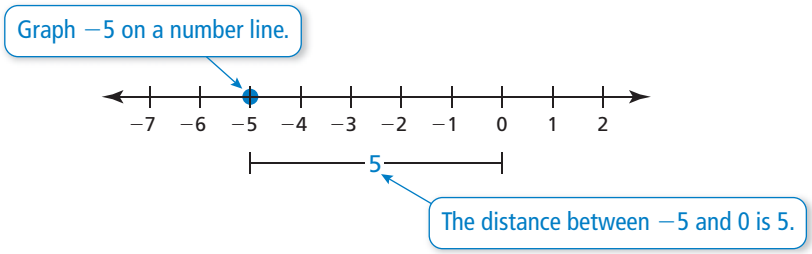
Name _____ Date _____

Operations with Integers

Adding and Subtracting Integers

The **absolute value** of an integer is the distance between the number and 0 on a number line. The absolute value of a number x is written as $|x|$.

Example 1 **Find the absolute value of -5.**



▶ So, $|-5| = 5$.

Rules for Adding and Subtracting Integers	
Adding:	To add integers with the *same* sign, add the absolute values of the integers. Then use the common sign. To add integers with *different* signs, subtract the lesser absolute value from the greater absolute value. Then use the sign of the integer with the greater absolute value.
Subtracting:	To subtract an integer, add its opposite.

Example 2 **Find (a) $-3 + (-8)$ and (b) $-9 + 6$.**

a. $-3 + (-8) = -11$ Add $|-3|$ and $|-8|$. Use the common sign.

▶ The sum is -11.

b. $-9 + 6 = -3$ $|-9| > |6|$. So, subtract $|6|$ from $|-9|$. Use the sign of -9.

▶ The sum is -3.

Example 3 **Find (a) $5 - (-12)$ and (b) $1 - 7$.**

a. $5 - (-12) = 5 + 12$ Add the opposite of -12.

$= 17$ Add.

▶ The difference is 17.

b. $1 - 7 = 1 + (-7)$ Add the opposite of 7.

$= -6$ Add.

▶ The difference is -6.

Example 4 **Simplify $|-14 - (-10)|$.**

$-14 - (-10) = |-14 + 10|$ Add the opposite of -10.

$= |-4|$ Add.

$= 4$ Find the absolute value.

▶ So, $|-14 - (-10)| = 4$.

Name _____ Date _____

Operations with Integers

Multiplying and Dividing Integers

Rules for Multiplying and Dividing Integers
Multiplying and Dividing: The product or quotient of two integers with the *same* sign is *positive*. The product or quotient of two integers with *different* signs is *negative*.

Example 5 **Find (a) $-7 \cdot (-1)$ and (b) $-9 \cdot 4$.**

a. $-7 \cdot (-1) = 7$ The integers have the same sign, so the product is positive.

▶ The product is 7.

b. $-9 \cdot 4 = -36$ The integers have different signs, so the product is negative.

▶ The product is -36.

Example 6 **Find (a) $18 \div (-2)$ and (b) $-25 \div (-5)$.**

a. $18 \div (-2) = -9$ The integers have different signs, so the quotient is negative.

▶ The quotient is -9.

b. $-25 \div (-5) = 5$ The integers have the same sign, so the quotient is positive.

▶ The quotient is 5.

Practice

Check your answers at BigIdeasMath.com.

Find the absolute value.

1. $|13|$ **2.** $|-8|$ **3.** $|0|$ **4.** $|-297|$

Evaluate.

5. $5 + (-11)$ **6.** $4 - 9$ **7.** $-15 + (-10)$ **8.** $9 + (-6)$

9. $0 - (-50)$ **10.** $-8 + 20$ **11.** $-11 - 11$ **12.** $-14 + 0$

13. $20 - (-21)$ **14.** $-34 - (-25)$ **15.** $-8 + (-3) + 6$ **16.** $1 + 7 - 9$

Simplify the expression.

17. $|-15 - 9|$ **18.** $|18 - (-11)|$ **19.** $|-14 + 17|$ **20.** $|-24 - (-19)|$

Evaluate.

21. $-8 \cdot 25$ **22.** $-33 \div (-3)$ **23.** $-13(-1)$ **24.** $-24 \div 4$

25. $0(-4)$ **26.** $-15(8)$ **27.** $\frac{0}{-12}$ **28.** $-1(-1)$

29. $\frac{-16}{-1}$ **30.** $240 \div (-8)$ **31.** $5 \cdot (-7) \cdot (-4)$ **32.** $12 \div (-3) \cdot 2$

33. **ELEVATION** The highest elevation in California is 14,494 feet, on Mount Whitney. The lowest elevation in California is -282 feet in Death Valley. Find the range of elevations in California.

34. **GOLF** The table shows a golfer's score for each round of a tournament. Find the golfer's total score and the golfer's mean score per round.

	Round 1	Round 2	Round 3
Score	-3	-4	$+1$