Section 1-5

Adding & Subtracting Real Numbers

Name: _____

take note

Key Concept Adding Real Numbers

Adding Numbers With the Same Sign

To add two numbers with the same sign, add their absolute values. The sum has the same sign as the addends.

Examples $3 + 4 = 7$ $-3 + (-4) = -7$

Adding Numbers With Different Signs

To add two numbers with different signs, subtract their absolute values. The sum has the same sign as the addend with the greater absolute value.

Examples $-3 + 4 = 1$ $3 + (-4) = -1$

Adding Real Numbers

What is each sum?

a) -12 + 7

b) -18 + (-2)

c) -4.8 + 9.5

d) $\frac{3}{4} + \left(-\frac{5}{6}\right)$

**You can check these answers in your textbook on page 31.

take note

Property Inverse Property of Addition

For every real number a, there is an additive inverse $-a$ such that $a + (-a) = -a + a = 0$.

Examples $14 + (-14) = 0$ $-14 + 14 = 0$

take note

Key Concept Subtracting Real Numbers

To subtract a real number, add its opposite: $a - b = a + (-b)$.

Examples $3 - 5 = 3 + (-5) = -2$ $3 - (-5) = 3 + 5 = 8$

Subtracting Real Numbers

What is each difference?

a) -8 – (-13)

b) 3.5 – 12.4

c) 9 – 9

**You can check these answers in your textbook on page 32.

Section 1-6

Multiplying & Dividing Real Numbers

Name: _____

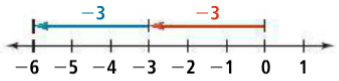
take note

Key Concept Multiplying Real Numbers

Words The product of two real numbers with *different* signs is *negative*.

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

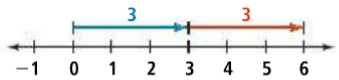
Model $2(-3) = -6$



Words The product of two real numbers with the *same* sign is *positive*.

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

Model $2 \cdot 3 = 6$



Multiplying Real Numbers

What is each product?

a) $12(-8)$

b) $24(0.5)$

c) $-\frac{3}{4} \cdot \frac{1}{2}$

d) $(-3)^2$

**You can check these answers in your textbook on page 39.

Square Roots			
Meaning	Positive Square Root	Negative Square Root	Both Positive & Negative Square Roots
Symbol	$\sqrt{\ }$	$-\sqrt{\ }$	$\pm\sqrt{\ }$
Example	$\sqrt{9} = 3$	$-\sqrt{9} = 3$	$\pm\sqrt{9} = \pm 3$

Simplifying Square Root Expressions

What is the simplified form of each expression?

a) $-\sqrt{25}$

b) $\pm\sqrt{\frac{4}{49}}$

**You can check these answers in your textbook on page 39.

take note

Key Concept Dividing Real Numbers

Words The quotient of two real numbers with *different* signs is *negative*.
Examples $-20 \div 5 = -4$ $20 \div (-5) = -4$

Words The quotient of two real numbers with the *same* sign is *positive*.
Examples $20 \div 5 = 4$ $-20 \div (-5) = 4$

Division Involving 0

Words The quotient of 0 and any nonzero real number is 0. The quotient of any real number and 0 is undefined.
Examples $0 \div 8 = 0$ $8 \div 0$ is undefined.

Dividing Real Numbers

A skydiver's elevation changes by -3600 ft in 4 minutes after the parachute opens. What is the average change in the skydiver's elevation each minute?

**You can check the answer in your textbook on page 40.

take note

Property Inverse Property of Multiplication

Words For every nonzero real number a, there is a **multiplicative inverse** $\frac{1}{a}$ such that $a(\frac{1}{a}) = 1$.

Examples The multiplicative inverse of -4 is $-\frac{1}{4}$ because $-4(-\frac{1}{4}) = 1$.

Dividing Fractions

What is the value of $\frac{x}{y}$ when $x = -\frac{3}{4}$ & $y = -\frac{2}{3}$?

**You can check the answer in your textbook on page 41.

1-5 + 1-6 Practice

Name: _____

Find each sum.

1. $17 + (-28)$
2. $-2 + 7$
3. $-9 + (-2)$
4. $5.1 + (-0.7)$
5. $\frac{1}{2} + \left(-\frac{7}{2}\right)$
6. $\frac{7}{9} + \left(-\frac{5}{12}\right)$

Find each difference.

7. $-13 - 7$
8. $36 - (-12)$
9. $-7 - (-5)$
10. $-2.5 - 17.8$
11. $\frac{1}{8} - \frac{3}{4}$
12. $\frac{7}{16} - \left(-\frac{1}{2}\right)$

Evaluate each expression for $a = -2$, $b = -4.1$, and $c = 5$.

13. $a - b + c$
14. $-c + b - a$
15. $-a + (-c)$

Find each product. Simplify, if necessary.

16. $8(12)$
17. $5 \cdot 4.1$
18. $10(-2.5)$
19. $-\frac{1}{9}\left(-\frac{3}{4}\right)$
20. $-\frac{2}{11}\left(-\frac{11}{2}\right)$
21. $(-1.2)^2$

Simplify each expression.

22. $\sqrt{169}$
23. $-\sqrt{900}$
24. $\pm\sqrt{0.25}$
25. $-\sqrt{\frac{25}{81}}$
26. $\sqrt{\frac{121}{16}}$
27. $\pm\sqrt{\frac{4}{16}}$

Find each quotient. Simplify, if necessary.

28. $-84 \div 14$
29. $-75 \div -0.3$
30. $-8.1 \div 9$
31. $\frac{63}{-21}$
32. $-5 \div \left(-\frac{5}{3}\right)$
33. $-\frac{12}{13} \div \frac{12}{13}$

Find the value of the expression $\frac{x}{y}$ for the given values of x & y. Write your answer in the simplest form.

34. $x = -\frac{5}{6}$ & $y = \frac{3}{5}$
35. $x = -\frac{3}{8}$ & $y = -\frac{3}{4}$