

2.6 Divide Real Numbers

Goal • Divide real numbers.

Your Notes

VOCABULARY

Multiplicative inverse

INVERSE PROPERTY OF MULTIPLICATION

Words

The _____ of a nonzero number and its multiplicative inverse is ____.

Algebra

$$a \cdot \frac{1}{a} = _, a \neq _$$

Numbers

$$4 \cdot \frac{1}{4} = _$$

Example 1 Find multiplicative inverses of numbers

Identify the multiplicative inverse and justify your answer.

Solution

Number	Multiplicative inverse	Reason
a. 9	_____	_____
b. $-\frac{5}{6}$	_____	_____

Your Notes

Checkpoint Find the multiplicative inverse.

1. $-\frac{2}{3}$	2. 3
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DIVISION RULE

Words

To divide a number a by a nonzero number b , multiply ___ by the multiplicative inverse of ___.

Algebra

$$a \div b = a \cdot \underline{\quad}, b \neq \underline{\quad}$$

Numbers

$$7 \div 3 = \underline{\quad}$$

You cannot divide a real number by 0, because 0 does not have a multiplicative inverse.

THE SIGN OF A QUOTIENT

The quotient of two real numbers with the same sign is _____.

The quotient of two real numbers with different signs is _____.

The quotient of 0 and any nonzero real number is ____.

Example 2 *Divide real numbers*

Find the quotient.

Solution

a. $25 \div 5 = 25 \cdot \underline{\quad} = \underline{\quad}$

b. $-40 \div \frac{2}{3} = -40 \cdot \underline{\quad} = \underline{\quad}$

Your Notes

✓ **Checkpoint** Find the quotient.

3. $\frac{1}{2} \div \frac{3}{4}$	4. $16 \div \left(-\frac{1}{4}\right)$
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Example 3 Simplify an expression

Simplify the expression $\frac{48y - 32}{8}$.

Solution

$$\frac{48y - 32}{8} = (48y - 32) \div \underline{\hspace{1cm}} \quad \text{Rewrite fraction as division.}$$

$$= (48y - 32) \cdot \underline{\hspace{1cm}} \quad \text{Division rule}$$

$$= 48y \cdot \underline{\hspace{1cm}} - 32 \cdot \underline{\hspace{1cm}} \quad \text{Distributive property}$$

$$= \underline{\hspace{2cm}} \quad \text{Simplify.}$$

✓ **Checkpoint** Simplify the expression.

5. $\frac{3a + 4}{2}$	6. $\frac{12x - 8}{4}$
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Homework