

## DIVIDING REAL NUMBERS

The quotient of 2 numbers with the same sign is positive.

$$-a \div -b = \frac{a}{b}$$

$$a \div b = \frac{a}{b}$$

The quotient of 2 numbers with opposite signs is negative.

$$-a \div b = -\frac{a}{b}$$

$$a \div -b = -\frac{a}{b}$$

DIVISION RULE- To divide a number  $a$  by a nonzero number  $b$ , multiply  $a$  by the reciprocal of  $b$ .

$$a \div b = a \cdot \frac{1}{b}$$

Evaluate.

$$1. \quad 10 \div (-2) \\ -5$$

$$4. \quad -15 \div (-5) \\ 3$$

$$2. \quad 1 \div \frac{5}{7} \quad \text{change to reciprocal} \\ \frac{1}{1} \cdot \frac{7}{5} = \frac{7}{5}$$

$$5. \quad 45 \div -\frac{5}{6} \\ \frac{45}{1} \cdot -\frac{6}{5} = -\frac{54}{1} = \boxed{-54}$$

$$3. \quad -39 \div (-4\frac{1}{3}) \\ -39 \div -\frac{13}{3} \\ \frac{-39}{1} \cdot -\frac{3}{13} = \frac{9}{1} = \boxed{9}$$

$$6. \quad \frac{2}{3} \div \frac{6}{1} \\ \frac{2}{3} \cdot \frac{1}{6} = \frac{1}{9}$$

$$7. \frac{-\frac{1}{3}}{-4} = -\frac{1}{3} \div -\frac{4}{1} = -\frac{1}{3} \cdot -\frac{1}{4} = \frac{1}{12}$$

$$9. \frac{-1}{\frac{3}{2}} = -\frac{1}{1} \div \frac{3}{2} = -\frac{1}{1} \cdot \frac{2}{3} = -\frac{2}{3}$$

$$8. \frac{1}{-\frac{3}{4}} = 1 \div -\frac{3}{4} = \frac{1}{1} \cdot -\frac{4}{3} = -\frac{4}{3}$$

$$10. \frac{-2\frac{1}{3}}{-3} = -\frac{7}{3} \div -\frac{3}{1} = -\frac{7}{3} \cdot -\frac{1}{3} = \frac{7}{9}$$

$$11. 8 \div (-4) = -2$$

$$13. \frac{-\frac{3}{4}}{3} = -\frac{3}{4} \div \frac{3}{1} = -\frac{3}{4} \cdot \frac{1}{3} = -\frac{1}{4}$$

$$12. -5 \div (-2\frac{1}{2}) = -5 \div -\frac{5}{2} = -\frac{5}{1} \cdot -\frac{2}{5} = \frac{2}{1} = 2$$

$$14. -81 \div (-9) = 9$$

15. Evaluate  $\frac{-2a}{a+b}$  when  $a = -2$  and  $b = -3$ .

$$\frac{-2(-2)}{-2 + -3} = \boxed{\frac{4}{-5}}$$

16. Evaluate  $\frac{5+x}{5y}$  when  $x = 5$  and  $y = -1$ .

$$\frac{5+5}{5(-1)} = \frac{10}{-5} = \boxed{-2}$$

Simplify.

17.  $\frac{32x - 8}{4}$

$$\frac{32x}{4} - \frac{8}{4}$$

$$\boxed{8x - 2}$$

19.  $\frac{9 - 27x}{-3}$

$$\frac{9}{-3} - \frac{27x}{-3}$$

$$-3 \quad \boxed{-9x}$$

$$\boxed{-3 + 9x}$$

18.  $\frac{64y + 24}{8}$

$$\frac{64y}{8} + \frac{24}{8}$$

$$\boxed{8y + 3}$$

20.  $\frac{-18k + 30m}{-6}$

$$\frac{-18k}{-6} + \frac{30m}{-6}$$

$$3k \quad \boxed{-5m}$$

$$\boxed{3k - 5m}$$