Dividing Integers

Goal: Divide integers.

Vocabulary

Data: Facts or numerical information

Mean: The sum of the values in a data set divided by the number of values

Dividing Integers

Words

Numbers

The quotient of two integers with the same sign is positive.

$$\frac{20}{4} = \boxed{5} \qquad \frac{-20}{-4} = \boxed{5}$$

The quotient of two integers with different signs is negative.

$$\frac{20}{-4} = \boxed{-5} \qquad \frac{-20}{4} = \boxed{-5}$$

The quotient of zero and any nonzero integer is $\boxed{0}$.

$$\frac{0}{20} = \boxed{0} \qquad \frac{0}{-20} = \boxed{0}$$

EXAMPLE 1 Dividing Integers

> **WATCH OUT!**
> You cannot divide a number by 0. The quotient of any number divided by 0 is *undefined*.

a. $\frac{-42}{-7} = \boxed{6}$ Same sign, so quotient is positive.

b. $\frac{-18}{2} = \boxed{-9}$ Different signs, so quotient is negative.
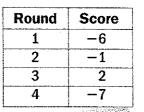
c. $\frac{32}{-8} = \boxed{-4}$ Different signs, so quotient is negative.

d. $\frac{0}{3} = \boxed{0}$ Dividend is 0 and divisior is nonzeor, so quotient is $\boxed{0}$.

EXAMPLE 2 **Multiple Choice Practice**

Golf You golf four rounds of 18 holes. The table shows your score for each round with respect to par. What is the mean of your scores for the four rounds?

Round	Score
1	−6
2	−1
3	2
4	−7

Ⓐ 3   Ⓑ −3   Ⓒ −12   Ⓓ 12

Solution

To find the mean of your scores, first find the sum of the scores.

$$-6 + (-1) + 2 + (-7) = \boxed{-12}$$

Then, divide the sum by the number of scores.

$$\frac{\boxed{-12}}{\boxed{4}} = \boxed{-3}$$

Answer: The mean of your scores is $\boxed{-3}$. The correct answer is $\boxed{B}$.

Ⓐ Ⓑ Ⓒ Ⓓ

Guided Practice Find the quotient.

1. $\frac{-48}{12}$	2. $\frac{-15}{-5}$	3. $\frac{0}{-9}$	4. $\frac{66}{-11}$

Find the mean of the data.

5. −8, 34, −72, −50, −29	6. −1, −5, −16, 21, −4, −18, −33
7. 45, −26, 12, −18, −23	8. 45, −55, −81, −13, −9, 34, −12

EXAMPLE 3 **Evaluating Expressions**

Evaluate the expression when $a = -30$, $b = 5$, and $c = -2$.

a. $\dfrac{a}{b}$

b. $\dfrac{a}{bc}$

Solution

a. $\dfrac{a}{b} = \dfrac{-30}{5}$ Substitute -30 for a and 5 for b.

$\quad\quad = -6$ Different signs, so quotient is $\boxed{\text{negative}}$.

b. $\dfrac{a}{bc} = \dfrac{-30}{5 \cdot (-2)}$ Substitute -30 for a, 5 for b, and -2 for c.

$\quad\quad = \dfrac{-30}{-10}$ Multiply.

$\quad\quad = 3$ Same sign, so quotient is $\boxed{\text{positive}}$.

Guided Practice Evaluate the expression when $a = 15$, $b = 3$, and $c = -3$.

Homework

9. $\dfrac{ac}{b}$

10. $\dfrac{b}{c}$

11. $\dfrac{c^2}{b}$