## Unit 5 Lesson 13: Expressions with Rational Numbers

### 1 True or False: Rational Numbers (Warm up)

#### Student Task Statement

Decide if each statement is true or false. Be prepared to explain your reasoning.

1. $\left(-38.76\right)\left(-15.6\right)$ is negative
2. $10,000−99,999<0$
3. $\left(\frac{3}{4}\right)\left(-\frac{4}{3}\right)=0$
4. $\left(30\right)\left(-80\right)−50=50−\left(30\right)\left(-80\right)$

### 2 Card Sort: The Same But Different

#### Student Task Statement

Your teacher will give you a set of cards. Group them into pairs of expressions that have the same value.

### 3 Near and Far From Zero

#### Student Task Statement

| $a$ | $b$ |     $-a$     |     $-4b$     |   $-a+b$   |   $a÷-b$   |     $a^{2}$     |     $b^{3}$     |
| --- | --- | --- | --- | --- | --- | --- | --- |
| $-\frac{1}{2}$ | 6 |  |  |  |  |  |  |
| $\frac{1}{2}$ | -6 |  |  |  |  |  |  |
| -6 | $-\frac{1}{2}$ |  |  |  |  |  |  |

1. For each set of values for $a$ and $b$, evaluate the given expressions and record your answers in the table.
2. When $a=-\frac{1}{2}$ and $b=6$, which expression:
* has the largest value?
* has the smallest value?
* is the closest to zero?
1. When $a=\frac{1}{2}$ and $b=-6$, which expression:
* has the largest value?
* has the smallest value?
* is the closest to zero?
1. When $a=-6$ and $b=-\frac{1}{2}$, which expression:
* has the largest value?
* has the smallest value?
* is the closest to zero?

### 4 Seagulls and Sharks Again (Optional)

#### Student Task Statement



A seagull has a vertical position $a$, and a shark has a vertical position $b$. Draw and label a point on the vertical axis to show the vertical position of each new animal.

1. A dragonfly at $d$, where $d=-b$
2. A jellyfish at $j$, where $j=2b$
3. An eagle at $e$, where $e=\frac{1}{4}a$.
4. A clownfish at $c$, where $c=\frac{-a}{2}$
5. A vulture at $v$, where $v=a+b$
6. A goose at $g$, where $g=a−b$



© CC BY Open Up Resources. Adaptations CC BY IM.