

Student ID		

Last Name: _____

First Name: _____

Show all your work.
If necessary, use extra sheets.

When appropriate,
BOX your final answer.

M\$5
Homework

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1. Which set of numbers is *not* closed with respect to the given operation?

- (1) integers with respect to multiplication
- (2) even integers with respect to addition
- (3) integers with respect to subtraction
- (4) odd integers with respect to addition

2. Which of the following expressions is irrational?

- (1) $\frac{\sqrt{121}}{11}$
- (2) $-\sqrt{576}$
- (3) $\frac{2\pi}{3\pi}$
- (4) $\sqrt{\frac{4}{3}}$

3. Which property of real numbers is illustrated by the equation $\otimes + (\Delta + 0) = (\otimes + \Delta) + 0$?

4. Name the property illustrated in each equation below:

a. $m + 2n = 2n + m$

b. $(r + s) + t = t + (r + s)$

c. $2(x + 2y) = 2x + 4y$

5. State whether the given set is closed under (i) addition (ii) subtraction (iii) multiplication or (iv) division. Justify your response.

a. $\left\{ 1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{32}, \dots \right\}$

b. $\{ \text{all positive multiples of } 3 \}$

6. State the property of real numbers that is illustrated by each equation.

a. $\sqrt{z} \cdot \frac{1}{\sqrt{z}} = 1$

b. $\frac{1}{\sqrt{2}} \cdot \left(\frac{\sqrt{2}}{\sqrt{2}} \right) = \frac{\sqrt{2}}{2}$

7. Which of the following sets of real numbers is closed under division?

- (1) $\{1\}$
- (2) $\{\text{all positive integers}\}$
- (3) $\{0\}$
- (4) $\{-1\}$