

1.2

Integer, Rational, and Irrational Numbers

• Example 1

For each number in the list below, indicate whether it is (1) an integer; (2) a rational number; (3) an irrational number; (4) a real number.

$$\sqrt{49}, \frac{\pi}{2}, 0.\overline{33}, -\sqrt{7}$$

Begin by determining the smallest set to which each belongs by simplifying or rewriting if possible.

$$\sqrt{49} = 7 \text{ is an integer.}$$

$$\frac{\pi}{2} \text{ is irrational.}$$

$$0.\overline{33} \text{ can be written as } \frac{1}{3}, \text{ a rational number.}$$

$$-\sqrt{7} \text{ is irrational.}$$

Therefore, we have

$$\text{integer: } \sqrt{49}$$

$$\text{rational: } 0.\overline{33}, \sqrt{49}$$

$$\text{irrational: } \frac{\pi}{2}, -\sqrt{7}$$

$$\text{real: } \sqrt{49}, \frac{\pi}{2}, 0.\overline{33}, -\sqrt{7}$$

• • • CHECK YOURSELF 1

For each number in the list below, indicate whether it is (1) an integer; (2) a rational number; (3) an irrational number; (4) a real number.

$$56.75, \sqrt{2}, \sqrt{\frac{9}{4}}, \frac{\sqrt{36}}{3}$$

● ● ● CHECK YOURSELF ANSWER

1. integer: $\frac{\sqrt{36}}{3}$

rational: 56.75, $\sqrt{\frac{9}{4}}$, $\frac{\sqrt{36}}{3}$

irrational: $\sqrt{2}$

real: 56.75, $\sqrt{2}$, $\sqrt{\frac{9}{4}}$, $\frac{\sqrt{36}}{3}$.

1.2 Exercises

Name _____

Section _____

Date _____

For each number in the lists below, indicate whether it is (1) an integer; (2) a rational number; (3) an irrational number; (4) a real number.

1. $-\sqrt{100}, 2\pi, 1.5, \frac{8}{5}$

2. $-\sqrt{10}, -3.65, 18, -\frac{8\pi}{2\pi}$

3. $\sqrt{1}, \frac{\sqrt{29}}{8}, \frac{99}{11}, -18.34$

4. $\frac{0}{\sqrt{3}}, \frac{\sqrt{8}}{\sqrt{2}}, 14, 42.3$

5. $\frac{\sqrt{6}}{3}, \frac{25}{24}, -\sqrt{32}, 41$

6. $\frac{\sqrt{144}}{12}, \frac{18\pi}{2}, 37.92, \frac{18}{6}$

7. $-2.75, \frac{87}{4}, -\frac{\sqrt{37}}{37}, \frac{\sqrt{27}}{\sqrt{3}}$

8. $13.5, -106, -\frac{49}{7}, \sqrt{20}$

9. $\frac{360}{45}, \sqrt{400}, 28.4, \frac{\sqrt{10}}{6}$

10. $\frac{18\pi}{2}, \frac{113}{7}, 22.22, \frac{98}{7}$

11. $\frac{\sqrt{28\pi}}{\pi}, 83.7, \frac{7}{114}, 22$

12. $-\pi, 14.7, -32, \frac{12}{3}$

A N S W E R S

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____