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Aim: I can describe the sum and product of rational and irrational numbers.

Do Now: Use your calculator to determine if the following are rational or irrational.

1. $\sqrt{2} \cdot \sqrt{5} = \sqrt{10}$
I · I Irrational

2. $(\sqrt{2} + 3)(\sqrt{2} - 3)$
I · I

$2 - \frac{3\sqrt{2}}{+3\sqrt{2}} - 9$ $2 - 9 = \textcircled{-7}$
Rational

Directions: Use these values to complete level 1 and Level 2 below:

$A = 0$ Rational
 $B = \sqrt{5}$ Irrational
 $C = 10$ Rational

$D = \sqrt{16}$ Rational
 $E = 16$ Rational
 $F = \sqrt{20}$ Irrational

Level 1: Identify whether each of the following are rational or irrational.

A: Rational 0

B: Irrational $\sqrt{5}$

C: Rational 10

D: Rational $\sqrt{16} = 4$

E: Rational 16

F: Irrational $\sqrt{20} = 2\sqrt{5}$

Level 2: Identify whether each of the following are rational or irrational.

$D + E: \frac{4 + 16 = 20}{R + R = \text{Rational}}$

$B \cdot C: \frac{\sqrt{5} \cdot 10 = 10\sqrt{5}}{I \cdot R = \text{Irrational}}$

$A + B: \frac{0 + \sqrt{5} = \sqrt{5}}{R + I = \text{Irrational}}$

$B \cdot F: \frac{\sqrt{5} \cdot \sqrt{20} = \sqrt{100} \text{ or } \sqrt{5} \cdot 2\sqrt{5} = 10}{I \cdot I = \text{Rational}}$

$C + E: \frac{10 + 16 = 26}{R + R = \text{Rational}}$

$C \cdot D: \frac{10 \cdot \sqrt{16} = 10 \cdot 4 = 40}{R \cdot R = \text{Rational}}$

$B + F: \frac{\sqrt{5} + \sqrt{20} = \sqrt{5} + 2\sqrt{5} = \textcircled{3\sqrt{5}}}{I + I = \text{Irrational}}$

$A \cdot C: \frac{0 \cdot 10 = 0}{R \cdot R = \text{Rational}}$