LESSON 1.3

Challenge Practice

For use with the lesson "Write Expressions"

1. If two people working for two hours can produce 50 jars of tomatoes, how many jars of tomatoes can be produced by six people working for five hours?

2. Look for the pattern in the expressions shown below. Use the pattern to write an expression for the sum of squares of the whole numbers from 1 to n.

$$1^2 + 2^2 = \frac{2(2 + 1)(2 \cdot 2 + 1)}{6}$$

$$1^2 + 2^2 + 3^2 = \frac{3(3 + 1)(2 \cdot 3 + 1)}{6}$$

$$1^2 + 2^2 + 3^2 + 4^2 = \frac{4(4 + 1)(2 \cdot 4 + 1)}{6}$$

3. Use the expression you found in Exercise 2 to find the sum of the squares of the whole numbers from 1 to 20.

4. Look for the pattern in the expressions shown below. Use the pattern to write an expression for the sum of cubes of the whole numbers from 1 to n.

$$1^3 + 2^3 = \left[\frac{2(2 + 1)}{2}\right]^2$$

$$1^3 + 2^3 + 3^3 = \left[\frac{3(3 + 1)}{2}\right]^2$$

$$1^3 + 2^3 + 3^3 + 4^3 = \left[\frac{4(4 + 1)}{2}\right]^2$$

5. Use the expression you found in Exercise 4 to find the sum of the cubes of the whole numbers from 1 to 20.

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Algebra 1