Review of Prerequisite Skills

If you need help with any of the skills listed in **purple** below, refer to Appendix A.

1. Tree diagrams Draw a tree diagram to illustrate the number of ways a quarter, a dime, and a nickel can come up heads or tails if you toss one after the other.

2. Tree diagrams

   a) Draw a tree diagram to illustrate the possible outcomes of tossing a coin and rolling a six-sided die.

   b) How many possible outcomes are there?

3. Number patterns The manager of a grocery store asks a stock clerk to arrange a display of canned vegetables in a triangular pyramid like the one shown. Assume all cans are the same size and shape.
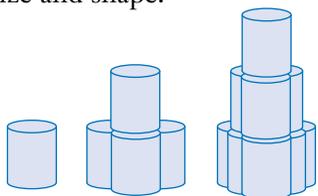

   a) How many cans is the tallest complete pyramid that the clerk can make with 100 cans of vegetables?

   b) How many cans make up the base level of the pyramid in part a)?

   c) How many cans are in the full pyramid in part a)?

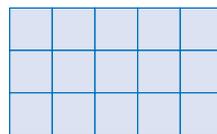   **d)** What is the sequence of the numbers of cans in the levels of the pyramid?

4. Number patterns What is the greatest possible number of rectangles that can be drawn on a
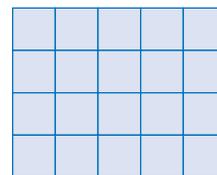
   a) 1 by 5 grid?   **b)** 2 by 5 grid?
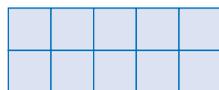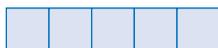
   c) 3 by 5 grid?   **d)** 4 by 5 grid?

5. Evaluating expressions Evaluate each expression given $x = 5$, $y = 4$, and $z = 3$.

   a) $\dfrac{8y(x+2)(y+2)(z+2)}{(x-3)(y+3)(z+2)}$

   b) $\dfrac{(x-2)^3(y+2)^2(z+1)^2}{y(x+1)(y-1)^2}$

   c) $\dfrac{(x+4)(y-2)(z+3)}{(y-1)(x-3)z} + \dfrac{(x-1)^2(z+1)y}{(x-3)^4(y+4)}$

6. Order of operations Evaluate.

   a) $5(4) + (-1)^3(3)^2$

   b) $\dfrac{(10-2)^2(10-3)^2}{(10-2)^2-(10-3)^2}$

   c) $\dfrac{6(6-1)(6-2)(6-3)(6-4)(6-5)}{3(3-1)(3-2)}$

   d) $\dfrac{50(50-1)(50-2)\ldots(50-49)}{48(48-1)(48-2)\ldots(48-47)}$

   e) $\dfrac{12 \times 11 \times 10 \times 9}{6^2} + \dfrac{10 \times 9 \times 8 \times 7}{2^4}$
   $- \dfrac{8 \times 7 \times 6 \times 5}{42}$

7. Simplifying expressions Simplify.

   a) $\dfrac{x^2-xy+2x}{2x}$ **b)** $\dfrac{(4x+8)^2}{16}$

   c) $\dfrac{14(3x^2+6)}{7 \times 6}$

   d) $\dfrac{x(x-1)(x-2)(x-3)}{x^2-2x}$

   e) $\dfrac{2y+1}{x} + \dfrac{16y+4}{4x}$