

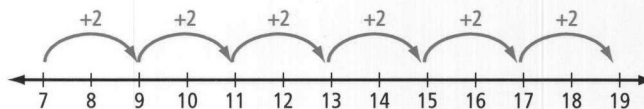
Patterns

Patterns can be described in words. They can be extended to find further terms.

The **sequence** or number pattern

7, 9, 11, 13, ... begins with 7. You can find

the next term by adding 2 to the previous term. The next three terms are 15, 17, and 19.



1. Write the next three terms in each sequence.

a) 3, 9, 27, 81, ...

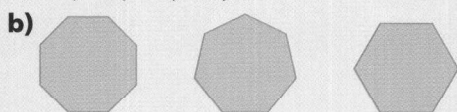
b) $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \dots$

c) 80, 70, 60, 50, ...

d) 4, 7, 10, 13, ...

2. Describe each pattern in words. Then, show the next three terms.

a) 10, 14, 18, 22, ...

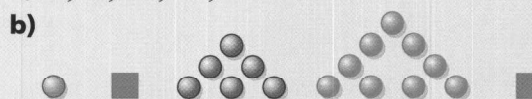


c) 729, 243, 81, 27, ...

d) $\frac{2}{3}, \frac{5}{3}, \frac{8}{3}, \frac{11}{3}, \dots$

3. Describe each pattern. Then, show the missing terms.

a) ■, ■, 15, 19, 23



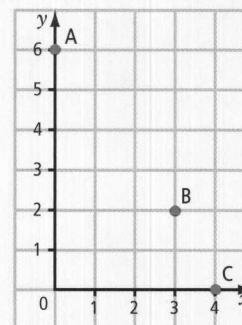
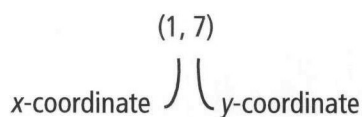
c) ■, 16, 8, ■, 2

d)

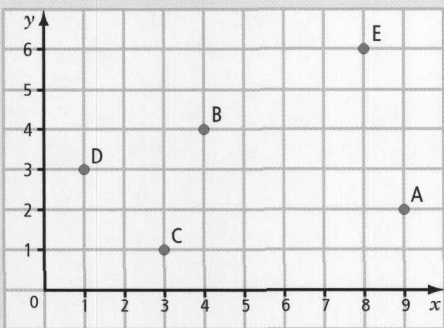
Days After Planting Grass Seed	Height of New Grass (mm)
1	5
2	10
3	
4	
5	25

Graphing Skills

In an **ordered pair**, the first number is the **x-coordinate**. The second number is the **y-coordinate**. To plot a point on a grid, find where the x-coordinate and y-coordinate meet. Then, mark a dot and label the ordered pair. The points A(0, 6), B(3, 2), and C(4, 0) are shown on the grid.



4. Write an ordered pair for each point on the grid.



5. a) Plot the ordered pairs A(1, 2), B(1, 4), C(2, 3), D(2, 5), E(3, 4), and F(3, 6).
 b) Join A to B, B to C, and so on. Describe the pattern.
 c) Predict the next two ordered pairs in the pattern.
6. a) Plot the ordered pairs Q(2, 8), R(3, 7), S(5, 7), T(6, 6), U(8, 6), and V(9, 5).
 b) Join Q to R, R to S, and so on. Describe the pattern.
 c) Predict the next two ordered pairs in the pattern.

Pythagorean Relationship

The **Pythagorean relationship** connects the sides of any right triangle. The Pythagorean relationship can be used to find the length of one side of a right triangle if the other two sides are known.

$$c^2 = a^2 + b^2$$

$$c^2 = 6^2 + 8^2$$

$$c^2 = 36 + 64$$

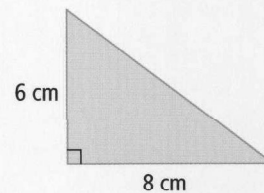
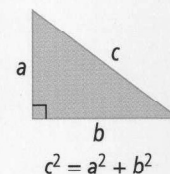
$$c^2 = 100$$

$$c = 10$$

Substitute the lengths of the legs for a and b .

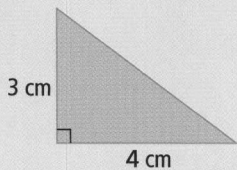
Find the square root of 100.

The missing side length is 10 cm.



7. Find the missing side length in each right triangle.

a)



b)

