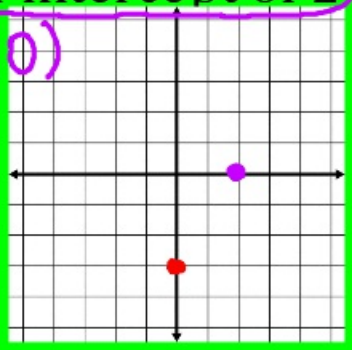
Warm Up November 8, 2018

1.) Write a linear function with a x-intercept of 2 and a y-intercept of -3.

$y = mx+b$

(2, 0)



(0, −3)

$$m = \frac{-3-0}{0-2} = \frac{-3}{-2} = \frac{3}{2}$$

$$y = \frac{3}{2}x - 3$$

2.) Tabitha had the following test scores in math: 76, 94, 81, and 82. If she wants an overall test average of 85%, what must she score on her next test?

x

$$\frac{76+94+81+82+x}{5} = 85$$

$$\frac{333+x}{5} = 85$$

$$333+x = 425$$

$$-333 \quad -333$$

$$x = 92$$

3.) The area of a triangle, A, can be calculated using the formula $A = \frac{bh}{2}$. Solve for b.

$$A = \frac{bh}{2}$$

$$\frac{2A}{h} = \frac{bh}{h}$$

$$b = \frac{2A}{h}$$

17. Kate bought $23.40 worth of two types of bird seed. Thistle bird seed sells for $1.60 per pound and wild bird seed sells for $0.95 per pound. If she bought 12 pounds of wild bird seed, write and solve a linear equation to find the amount of thistle bird she purchased. seed purchased.

x = lbs. of thistle bird seed

y = lbs of wild bird seed

↳ x

$1.60x + .95y = 23.40$ standard form

$1.60x + .95(12) = 23.40$

$1.60x + 11.40 = 23.40$

$-11.40 \quad -11.40$

$\frac{1.60x}{1.60} = \frac{12}{1.60}$

$x = 7.5$ lbs of thistle bird seed

18. Jeff is keeping track of his weight over several weeks. After 2 weeks, he weighs 194 pounds. After 6 weeks, he weighs 186 pounds. Write and solve a linear equation to find Jeff's weight after 12 weeks.

$(2, 194)(6, 186)$ two points (weeks, lbs)

$m = \frac{186 - 194}{6 - 2} = \frac{-8}{4} = -2$

$\frac{\Delta y}{\Delta x} = \frac{\text{lbs}}{\text{week}}$

- Jeff lost 2 lbs per week.

$y - 194 = -2(x - 2)$

$y - 194 = -2x + 4$

$+194 \quad +194$

$y = -2x + 198$

$y = -2(12) + 198$

$y = 174$ lbs

Jeff's starting weight is 198 lbs.

1.) 27, 31, 35, 39

$d = 4 \quad a_1 = 27$

$a_n = 4(n-1) + 27$

$4n - 4 + 27$

$a_n = 4n + 23$

$a_n = a_{n-1} + 4$

2.) 4, -3, -10, -17

4.) 1/2, 5/2, 9/2, 13/2,....

$d = \frac{4}{2}$ OR 2

$\frac{1}{2} + \frac{4}{2} = \frac{5}{2}$

$a_1 = \frac{1}{2}$

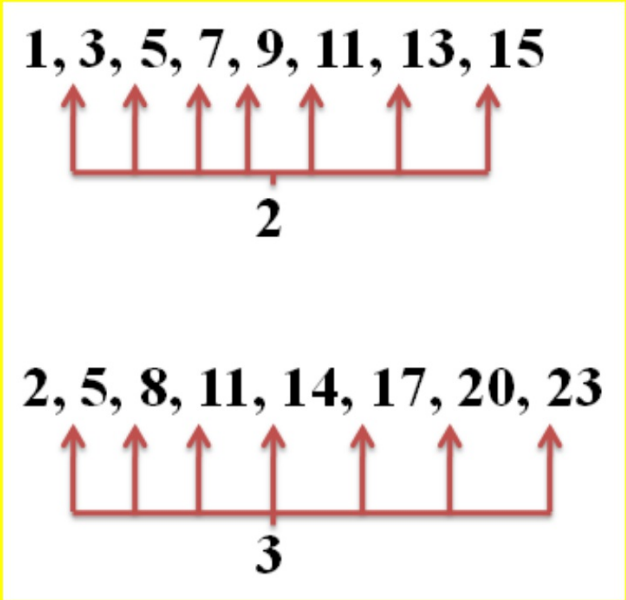
$a_n = 2(n-1) + \frac{1}{2}$

$= 2n - 2 + \frac{1}{2}$

$a_n = 2n - \frac{3}{2}$

$a_n = a_{n-1} + 2$

Arithmetic Sequences



What is it?

Main Ideas/Questions	Notes
Arithmetic Sequence	a sequence in which the same number is added or subtracted repeatedly
Common Difference	the number being repeatedly added or subtracted; represented by variable d

Identifying an Arithmetic Sequence	***Determine whether the sequences are arithmetic sequences. If yes, identify the common difference.***	
	1. 1, 5, 9, 13, ...	**2.** 1, 3, 5, 8, ...
	3. 8, 6, 4, 2, ...	**4.** -5, -8, -11, -14, ...
	5. 5, 10, 20, 40, ...	**6.** 7, 6, 5, 4, ...

One Step Further...

Write a recursive formula for the sequences --> $a_n = a_{n-1} + d$

1.) 1, 5, 9, 13 Arithmetic? Yes or NO

Common Difference (d) = _____

a_n = _____

3.) 8, 6, 4, 2 Arithmetic? Yes or NO

Common Difference (d) = _____

a_n = _____

Arithmetic Sequences:
THE EXPLICIT FORMULA

Arithmetic Sequence Formula

The n^{th} term of an arithmetic sequence can be found using the following formula:

$$a_n = d(n-1) + a_1$$

d = common difference

a_1 = first term

n= desired term

Examples:

Examples

Write the rule for the nth term, then find a_{19}.

10. 7, 13, 19, 25, …

d=_____

a_1 = _____

n= _____

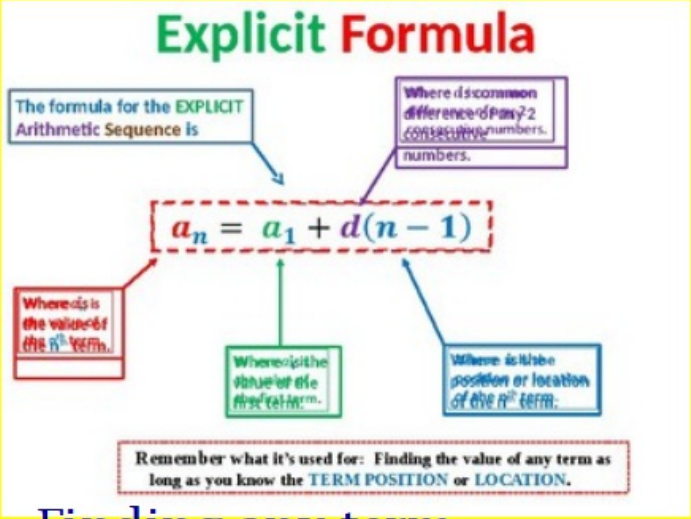
11. 30, 26, 22, 18,…

d=_____

a_1 = _____

n= _____

Explicit



Finding any term.

Recursive

Recursive Formula

If you know any term of an arithmetic sequence and you know the common difference of the sequence, you can find the next term.

$$a_n = a_{n-1} + d$$

Finding next term.