

**Find the next item in the pattern.**

January, March, May, ...

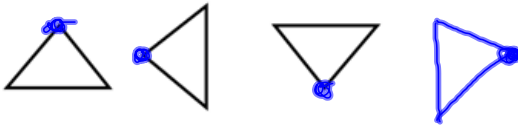
July

**Find the next item in the pattern.**

7, 14, 21, 28, ...

35

**Find the next item in the pattern.**



Apr 26-8:04 AM

★ **Inductive reasoning** is the process of reasoning that a rule or statement is true because specific cases are true.

You may use inductive reasoning to draw a conclusion from a pattern.

A statement you believe to be true based on inductive reasoning is called a **conjecture**. ★

Apr 26-8:07 AM

Complete the conjecture.

positive

The sum of two positive numbers is ?.

$$2+4 = \boxed{6}$$
$$4+4 = \boxed{8}$$

$$10+12 = \boxed{22}$$

$$1+3 = 4$$

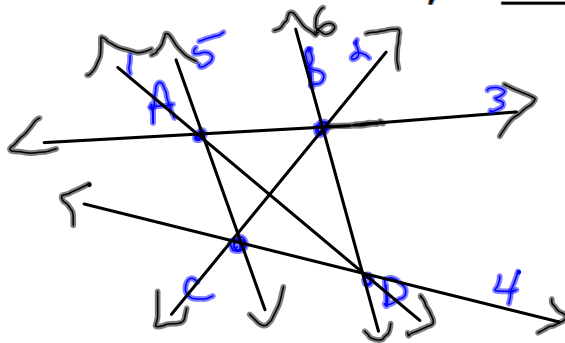
$$1+2 = \boxed{3}$$

The sum of two positive numbers is **positive**.

Apr 26-8:08 AM

Complete the conjecture.

The number of lines formed by 4 points, no three of which are collinear, is ?.



The number of lines formed by four points, no three of which are collinear, is 6.

Apr 26-8:09 AM

Complete the conjecture.

The product of two odd numbers is ?.

*odd*

$$\begin{array}{l} 1(3) = 3 \\ 3(-9) = -27 \\ -3(3) = 9 \end{array}$$

Apr 26-8:10 AM

The cloud of water leaving a whale's blowhole when it exhales is called its *blow*. A biologist observed blue-whale blows of 25 ft, 29 ft, 27 ft, and 24 ft. Another biologist recorded humpback-whale blows of 8 ft, 7 ft, 8 ft, and 9 ft. Make a conjecture based on the data.

Heights of Whale Blows				
Height of Blue-whale Blows	25	29	27	24
Height of Humpback-whale Blows	8	7	8	9

The smallest blue-whale blow (24 ft) is almost three times higher than the greatest humpback-whale blow (9 ft). Possible conjectures:

The height of a blue whale's blow is about three times greater than a humpback whale's blow.

The height of a blue-whale's blow is greater than a humpback whale's blow.

Apr 26-8:10 AM

**Make a conjecture about the lengths of male and female whales based on the data.**

Average Whale Lengths						
Length of Female (ft)	49	51	50	48	51	47
Length of Male (ft)	47	45	44	46	48	48

*In 5 of the 6 pairs of numbers above the female is longer.*

**Female whales are longer than male whales.**

Apr 26-8:11 AM

To show that a conjecture is false, you have to find only one example in which the conjecture is not true. This case is called a **counterexample**.

A counterexample can be a drawing, a statement, or a number.

Apr 26-8:11 AM

**Show that the conjecture is false by finding a counterexample.**

**For every integer  $n$ ,  $n^3$  is positive.**

$$n = -3 \quad (-3)^3 = (-3)(-3)(-3) = -27$$

Apr 26-8:12 AM

**Show that the conjecture is false by finding a counterexample.**

**Two complementary angles are not congruent.**

$$45^\circ \text{ \& } 45^\circ$$

Apr 26-8:12 AM

Show that the conjecture is false by finding a counterexample.

For any real number  $x$ ,  $x^2 \geq x$ .

$$x = \frac{1}{3}$$

$$\left(\frac{1}{3}\right)^2 = \frac{1}{9}$$

$$x^2 = \frac{1}{9}$$

$$x^2 < x$$

P77, #2-22, 28,  
37-39, 48-51

Apr 26-8:12 AM