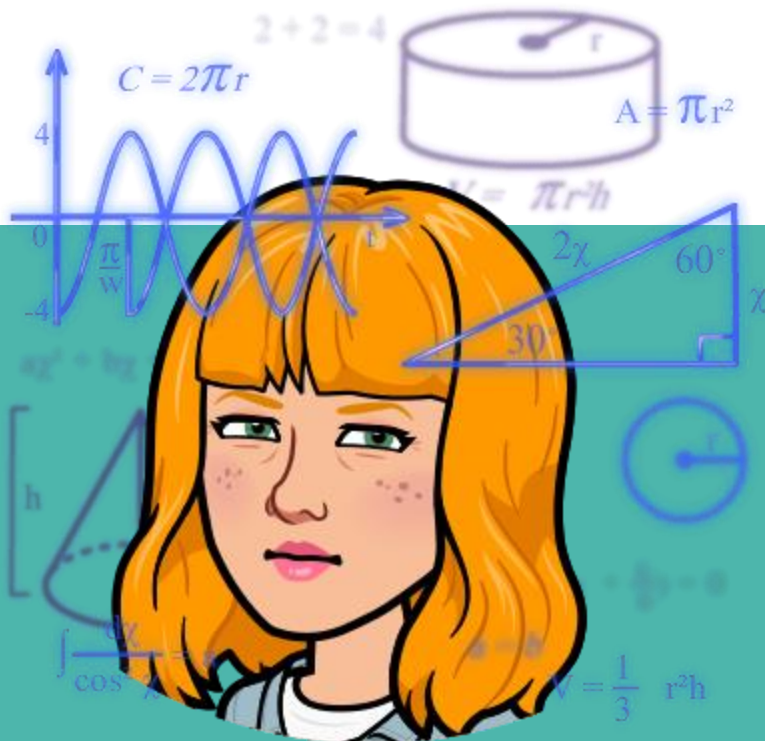


# MATH PROFICIENCY TEST PREP



# GOOD RESOURCES



Knowledgehook

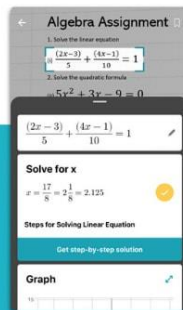


Khan Academy

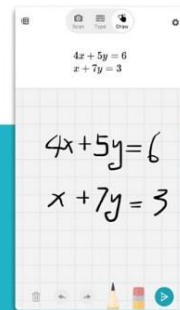
math  
Antics®



Microsoft Math



Scan and solve  
math problems



Write naturally  
as on paper



Get step-by-step  
explanations

# TIPS

- ❑ Learn how the math **works** – it will build a **deeper** understanding
- ❑ There are many ways to get to an answer – all are valid but due to time restrictions it is important you find the **most efficient** one for you (one size does not fit all)
- ❑ Take your time to read the question carefully, sometimes the **wording is tricky** – it is important you **understand what the question is asking for prior to solving** or you could be solving for the wrong thing.

# TIPS

- ❑ Know your **basic formulas**, if you have flip around looking for them it will take up too much of your time.
- ❑ Do the **questions you know first** and then go back – feeling confident in what you are doing is likely to activate prior learning and help you with the ones you were unsure of.
- ❑ If you have to guess do it **strategically** – what makes the **most sense**.

# TIPS

- ❑ For pedagogy portion focus on **differentiated instruction** (Learning for All), **types of assessments** (as, for and of), **purpose and use of assessment charts** (Growing Success) and **IEPs** (Learning for All).

# STUDENT VOICE

One of the most impactful things I have learned during my journey as a teacher and the opportunities I have had to learn with and from other teachers is the importance of **student voice**.

It is important as a teacher/tutor to “**listen**” to what is **needed** and how it is best **delivered** and **assessed** (but unfortunately that part is not going to happen).

I would like to give you to tell me what that looks like for you.

## Content

Some ideas might be . . . .

- Surface area & Volume
- Equations / Linear equations
- Ratios & Rates
- Fractions

## Learning Strategies

Some ideas might be . . . .

- Explicit instruction
- Guided practice
- Group inquiry
- Practice questions and feedback

# LINEAR EQUATIONS / SLOPE / Y INTERCEPT

The equation of any **straight line**, called a **linear equation**, can be written as:  $y = mx + b$ , where  $m$  is the **slope** (rate of change – what the pattern is increasing by) of the line and  $b$  is the **y-intercept** (zero value, constant).

## Example:

Liam is going to the fair and it costs **\$15 to get in** and **\$5 per ride ticket**.

**\$15 is the b or y-intercept.** Liam will have to pay the \$15 before he can go on any rides.

**\$5 is the m or slope** (rate of change) this value will change depending on how many rides he goes on.

If Liam spends \$45 at the fair, how many rides did he go on?

**Linear equation:**  $5x + 15 = 45$  - now you can solve for  $x$ .

# TRY IT ...

Balinda is renting a moped to ride around for the day on her vacation. The moped costs \$30 to rent **plus** an hourly fee of \$5.

What is an **equation** you can write that shows the cost ( $c$ ), to rent this moped for **any** number of hours ( $h$ )?

\$5 per hour + \$30 to rent = cost

$$5x + 30 = c$$

How much would it cost Balinda to rent the moped for 4 hours?

\$5 per hour + \$30 to rent = cost

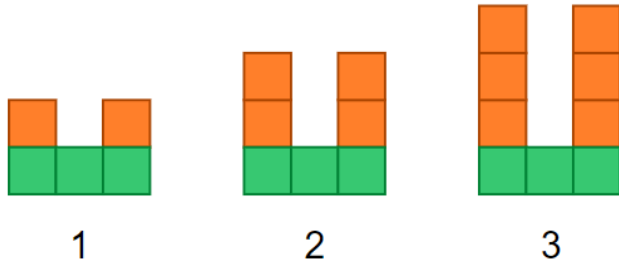
$$5(4) + 30 = c$$

$$20 + 30 = c$$

$$50 = c$$



# WRITING EQUATIONS



Term #	# of cubes
1	5
2	7
3	9
4	11

Handwritten annotations: A blue bracket on the right side of the table indicates a constant difference of 2 between terms. A blue circle highlights the '3' in the 'Term #' header. A blue circle highlights the '3' in the '# of cubes' header.

What **general term** can you write that describes the pattern in terms of the position number  $n$ ? (number of cubes in **any term** of the pattern)

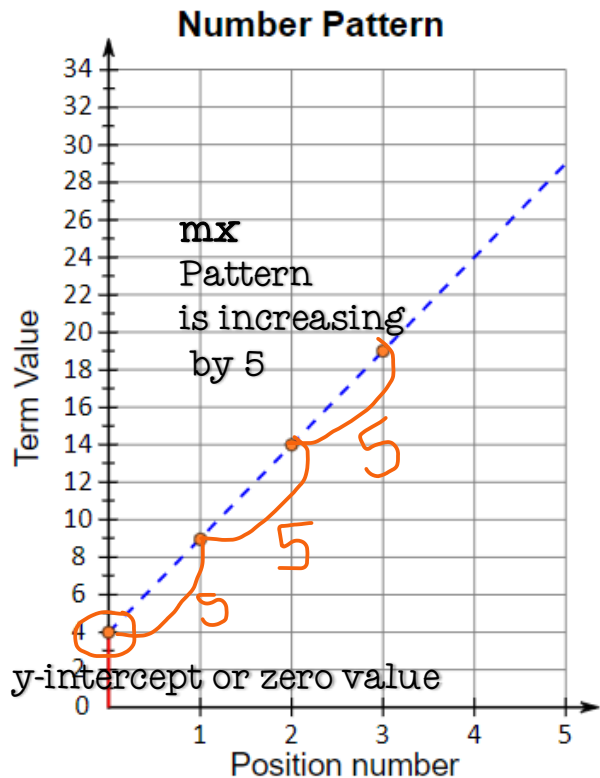
**2x** is my **slope** – it is what my pattern is **increasing** by

**3** is my  $y$ -intercept or zero value / constant

It stays the same no matter how many terms are in the pattern

**General Term:  $2x + 3 =$  number of cubes in that term**

# WRITING EQUATIONS



What **general term** can you write that describes the pattern in terms of the position number  $n$ ? (number in **any term** of the pattern)

**4** is my y-intercept or zero value / constant  
It stays the same no matter how many terms are in the pattern

**5x** is my **slope** – it is what my pattern is **increasing** by

**General Term:  $5x + 4 = n$**

# WRITING EQUATIONS

$x$	$y$
0	1
1	3
2	5
3	7
4	9

What **general term** can you write that describes the pattern in terms of the position number  $n$ ? (number in **any term** of the pattern)

1 is my y-intercept or zero value / constant  
It stays the same no matter how many terms are in the pattern

$2x$  is my **slope** – it is what my pattern is **increasing** by

**General Term:  $2x + 1 =$  value of any term in that pattern**

What is the **value** of the **15<sup>th</sup> term** in the pattern?

# PYTHAGOREAN THEOREM

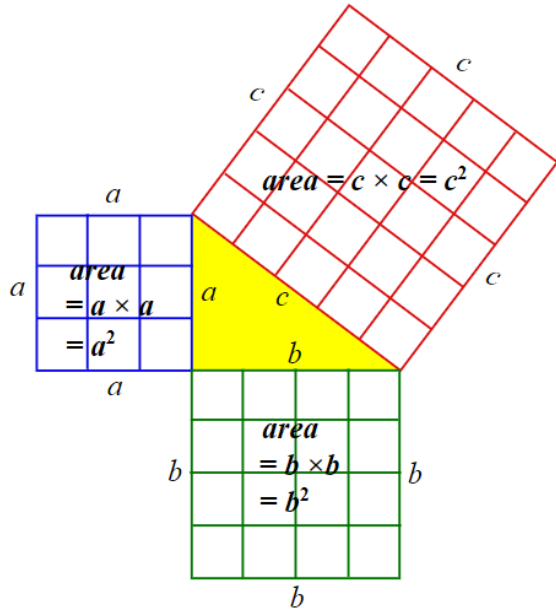


$A^2 + B^2 = C^2$

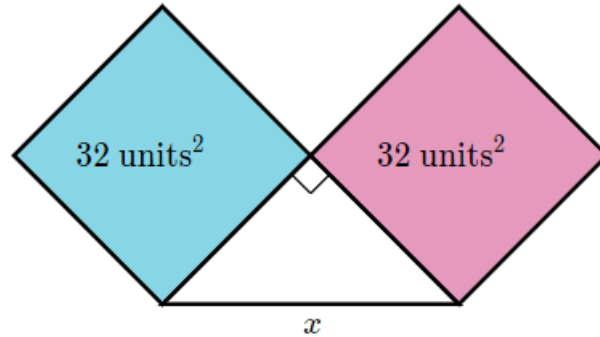
Pythagorean  
theorem intro

 Khan Academy

# PYTHAGOREAN THEOREM



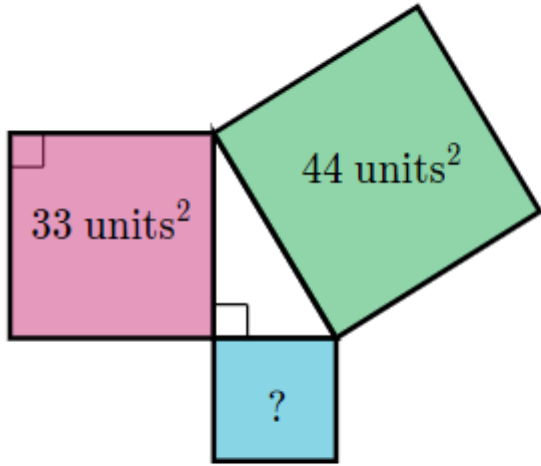
The areas of the squares adjacent to two sides of a right triangle are 32 units<sup>2</sup> and 32 units<sup>2</sup>.



Find the length,  $x$ , of the third side of the triangle.

$$\begin{aligned} a^2 + b^2 &= c^2 \\ 32 + 32 &= c^2 \\ 64 &= c^2 \\ \sqrt{64} &= \sqrt{c^2} \\ 8 &= c \end{aligned}$$

The areas of the squares adjacent to two sides of a right triangle are shown below.

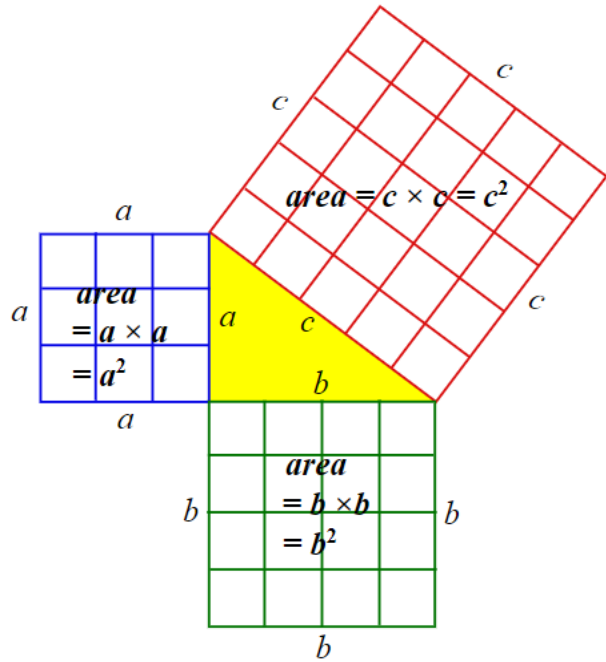


$$\begin{aligned} a^2 + b^2 &= c^2 \\ 33 + b^2 &= 44 \\ 44 - 33 &= b^2 \\ 11 &= b^2 \end{aligned}$$

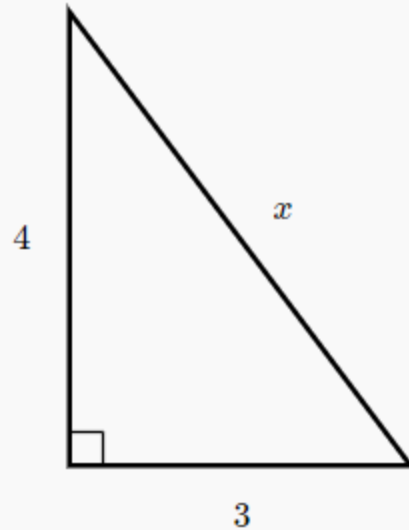
$$\begin{aligned} a^2 + b^2 &= c^2 \\ 33 + 11 &= 44 \end{aligned}$$

What is the area of the square adjacent to the third side of the triangle?

# PYTHAGOREAN THEOREM



Find the value of  $x$  in the triangle shown below.



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

$$4^2 + 3^2 = c^2$$

$$16 + 9 = c^2$$

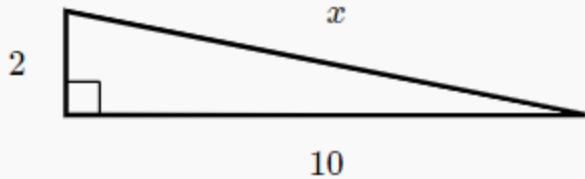
$$25 = c^2$$

$$\sqrt{25} = \sqrt{c^2}$$

$$5 = c$$

# TRY THIS...

Find the value of  $x$  in the triangle shown below.



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

$$2^2 + 10^2 = c^2$$

$$4 + 100 = c^2$$

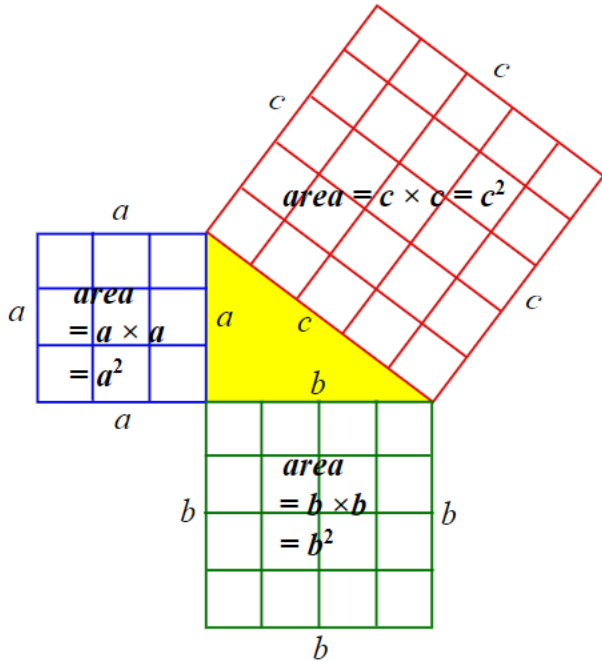
$$104 = c^2$$

$$\sqrt{104} = \sqrt{c^2}$$

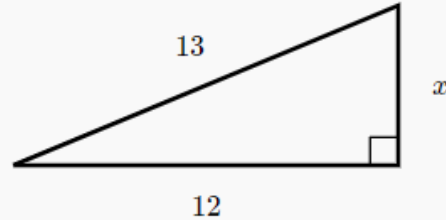
$$10.2 = c$$



# TRY THIS...



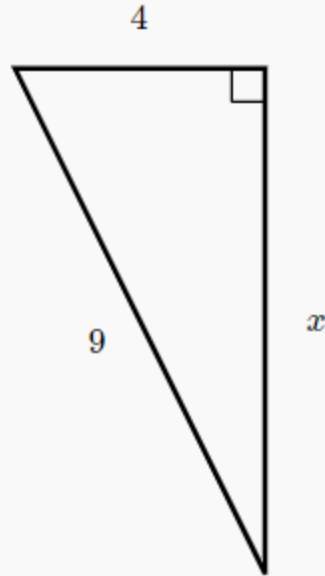
Find the value of  $x$  in the triangle shown below.



$$\begin{aligned}a^2 + b^2 &= c^2 \\c^2 - b^2 &= a^2 \\13^2 - 12^2 &= a^2 \\169 - 144 &= a^2 \\25 &= a^2 \\\sqrt{25} &= \sqrt{a^2} \\5 &= a\end{aligned}$$

# TRY THIS...

Find the value of  $x$  in the triangle shown below.



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

$$c^2 - a^2 = b^2$$

$$9^2 - 4^2 = b^2$$

$$81 - 16 = b^2$$

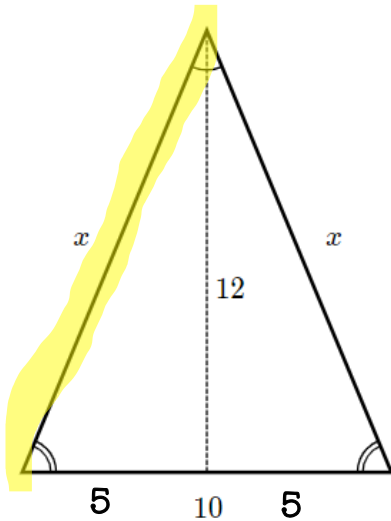
$$65 = b^2$$

$$\sqrt{65} = \sqrt{b^2}$$

$$8.06 = b$$

# TRY THIS...

Find the value of  $x$  in the isosceles triangle shown below.

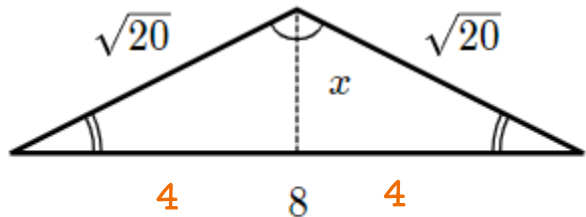


$x$  represents equal side lengths

$$\begin{aligned}a^2 + b^2 &= c^2 \\5^2 + 12^2 &= c^2 \\25 + 144 &= c^2 \\169 &= c^2 \\\sqrt{169} &= \sqrt{c^2} \\13 &= c\end{aligned}$$

# TRY THIS...

Find the value of  $x$  in the isosceles triangle shown below.



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

$$\sqrt{20} - b^2 = a^2$$

$$20 - 4^2 = a^2$$

$$20 - 16 = a^2$$

$$4 = a^2$$

$$\sqrt{4} = \sqrt{a^2}$$

$$2 = a$$

