Math 7 -8 Activities- Menu G

Curriculum Connections

Creating Futures, Leading and Learning for All

Instructions: Each day, choose from the options below. Choose as many or as few as you have time for.

Estimation

A: Estimation 180

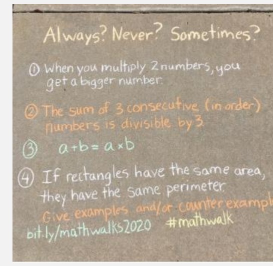
How long will it take to use all of the deodorant?

B: Does This Sound about Right?

My round trip to work each day is about 22 km. I estimate that the total distance travelled for work each year is 8000 km. **Does this seem right?**

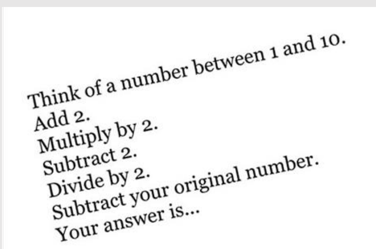
Try more questions like this here.

C: Always?, Never?, Sometimes?



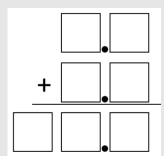
Working with Numbers

A: Math Magic Trick



B: Decimal Addition

Use the digits, 0 through 9, without repeats, to complete the equation below:



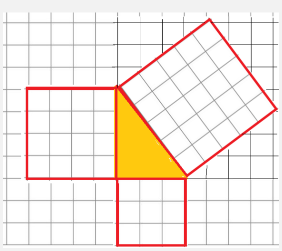
OPEN MIDDLE

C: Would You Rather?

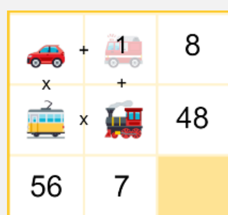
Have a 30 acre crop planted with seeds that carry a 58% survival rate OR have a 50 acre crop planted with seeds that carry a 42% survival rate?

Activities / Puzzles

A: Pythagorean Puzzle

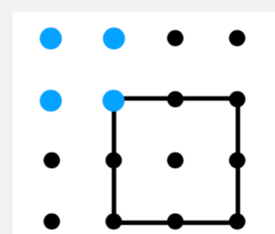


B: What is the value of each image?



Check your answers here.

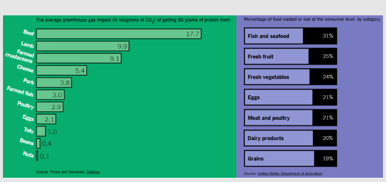
C: Square Counting



Problems

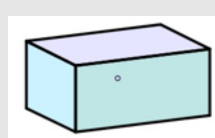
A: What's Going on in this Graph?

What effect does what we eat, and the food we waste, have on the environment?



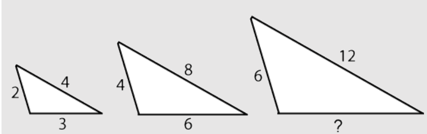
B: Puzzling Prisms

Find the length, width, and height of a rectangular prism that has a surface area of more than 200cm^2 but less that 300cm^2.



C: Number The Sides

The triangles in this set are similar. What can you say about the length of the side with a question mark?



Try some more questions here.

Technology

A: All in a Jumble

My measurements have got all jumbled up! Click here to play.

NRICH

B: Math Visuals

How would you solve **18 x 5** without a calculator?

Click here to watch a video with different strategies to solve this problem.

Which one was most similar to yours and why? Choose 1 strategy from the video and explain how it works.

C: Twin Puzzles

Go to student.desmos.com and type in the code:

desmos

8P7 8YX

Please click on this Icon, wherever you see it, to access Indigenous content.

Choice Board Background Information:

- ✓ Choice boards were created to provide flexibility in learning at home;
- ✓ Boards were planned for divisions: K-3, 4-6, 7-8 for open, individualized learning;
- ✓ Planned with recognition that parents may currently hold various roles at home;
- ✓ Designed to enhance the materials provided by the Ministry;
- ✓ Experiential learning focus with accessible materials at home;
- ✓ Low/No tech options;
- ✓ Accessible on mobile devices.

Choice Boards - Parents Can:

- ✓ Choose as many or as few learning opportunities as desired;
- ✓ Follow the days of the week or be flexible in using the choice boards;
- ✓ Be confident that the learning is based in curriculum;
- ✓ Engage other children in the home in common experiential learning (i.e., baking, reading, playing math games, being active together);
  - ✓ Click on the links provided for further learning and sample questions to ask;
    - ✓ Have fun!

UPPER CANADA District School Board

Explanatory Notes: LEARN AT HOME CHOICE BOARDS FOR PARENTS AND EDUCATORS

Creating Futures, Leading and Learning for All

Choice Board Activities Provide:

- ✓ Clear connections to curriculum expectations and process skills;
- ✓ Open activities with options to individualize learning;
- ✓ Accessibility (many require little to no technology);
- ✓ Math – focus on numeracy skills;
- ✓ Literacy – focus on reading, writing, oral language and media literacy;
- ✓ French learning opportunities;
- ✓ Health and Physical Well-Being;
- ✓ Opportunities to foster connections within the household;
- ✓ Focus on conversation and thinking.

Choice Boards - Teachers Can:

- ✓ Create classroom-based choice boards for students while they are learning at home;
- ✓ Incorporate ideas from the choice boards into teaching practices, daily and weekly planning;
- ✓ Explore and incorporate new resources into classroom learning;
- ✓ Engage students and families in virtually sharing learning with one another;
- ✓ Expand on activities in order to provide individualized learning opportunities;
- ✓ Incorporate other UCDSB resources (i.e., Math Tool, VLC, links) to extend student learning.

Use Data and Patterns to Predict the use of Deodorant Sticks

How long will it take to use all of the deodorant?

Write down your first estimate. After each clue, you'll see if your estimate is still a possibility. After each clue, if your estimate is no longer possible write down a new estimate.

What information would be useful to know here and how would you get it?

Click here for your first clue!

Source: http://www.estimation180.com/deodorant.html

Estimation 180

Use Data and Patterns to Predict the use of Deodorant Sticks

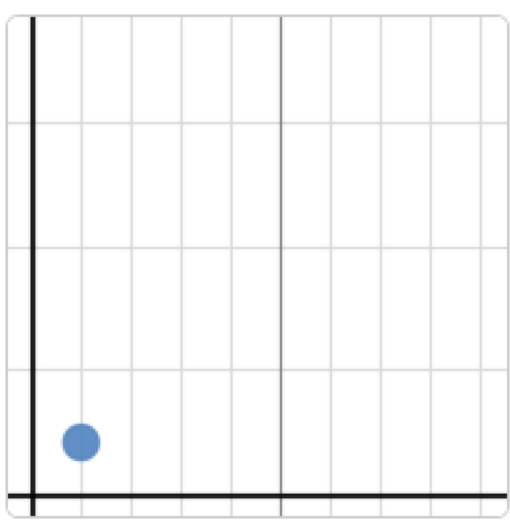
Clue 1:

B. 12-25-12
R.I.P. 4-10-13

B. 4-10-13

See if your estimate is still a possibility. If it is no longer possible write down a new estimate.

You may want to create a graph like the one below to help make your prediction. Remember to label the axes!



Click here for your next clue!

Source: http://www.estimation180.com/deodorant.html

Use Data and Patterns to Predict the use of Deodorant Sticks

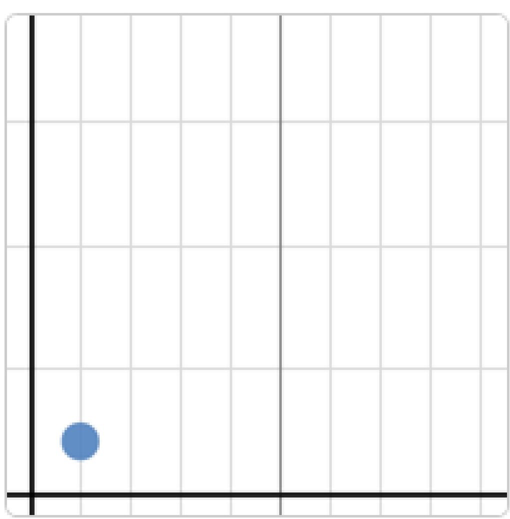
Clue 2:

B. 4-10-13
R.I.P. 7-18-13

B. 7-18-13

See if your estimate is still a possibility. If it is no longer possible write down a new estimate.

You may want to create a graph like the one below to help make your prediction. Remember to label the axes!



[Click here for your next clue!]

Source: http://www.estimation180.com/deodorant.html

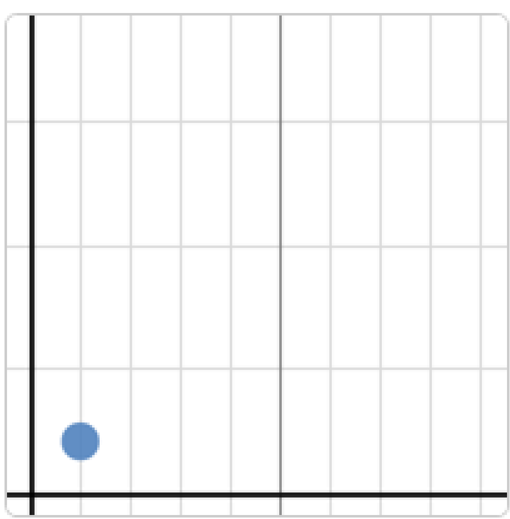
Estimation 180

Use Data and Patterns to Predict the use of Deodorant Sticks

Clue 3:

See if your estimate is still a possibility. If it is no longer possible write down a new estimate.

You may want to create a graph like the one below to help make your prediction. Remember to label the axes!



[Click here for your next clue!]

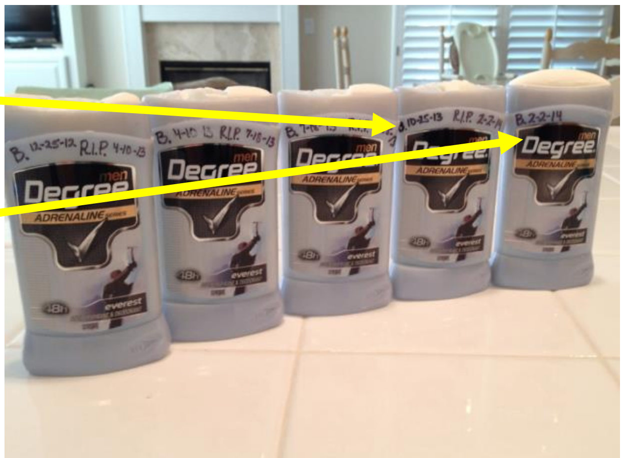
Source: http://www.estimation180.com/deodorant.html

Use Data and Patterns to Predict the use of Deodorant Sticks

Clue 4:

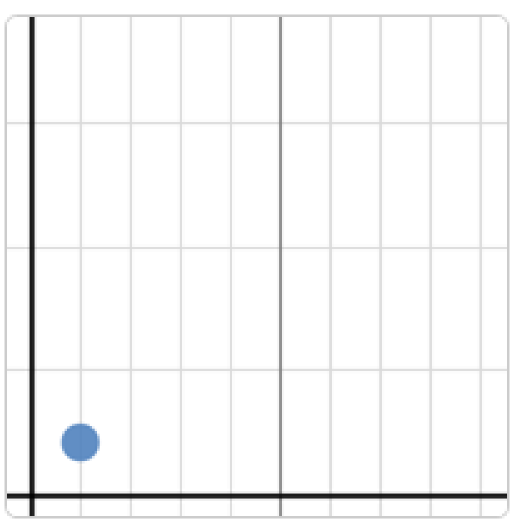
B. 10-25-13
R.I.P. 2-2-14

B. 2-2-14



See if your estimate is still a possibility. If it is no longer possible write down a new estimate.

You may want to create a graph like the one below to help make your prediction. Remember to label the axes!



[Click here for the reveal!]

Source: http://www.estimation180.com/deodorant.html

Estimation 180

Use Data and Patterns to Predict the use of Deodorant Sticks

The Reveal! How long will it take to use all of the deodorant?

Extension:
How many sticks of deodorant would one use in a lifetime?

Source: http://www.estimation180.com/deodorant.html

Does This Sound about Right?

A scientist makes a set of estimates of various physical quantities. Can you work out how the scientist made her estimates by reproducing the calculations? Do the answers sound about right, or has the scientist made any significant mistakes?

1. My round trip to work each day is about 22 km. I estimate that the total distance travelled for work each year is 8000 km. **Does this seem right?**

2. A bottle of water contains 500mL (or 500cm^3) of liquid. I fill a crate measuring 1m by 50cm by 50cm with bottles of water to take on a field trip. I estimate that the crate contains 500 bottles of water. **Does this seem right?**

3. The number of rings a tree has on its trunk can tell you how old it is. On a tree stump I measure the distance between two adjacent rings and find that it is 0.6cm. The diameter of the stump is almost half a meter. I estimate that the tree was 42 years old when it was cut down. **Does this seem right?**

4. Today I ate a 30g packet of chips at morning break time, as I always do, so I estimate that I eat almost 11kg of chips a year. **Does this seem right?**

Check you answers by clicking [here]().

Source: Adapted from https://nrich.maths.org/7418

Does This Sound about Right?

1. My round trip to work each day is about 22 km. I estimate that the total distance travelled for work each year is 8000 km. **Does this seem right?**

Possible Answer:

No. While 365 x 22km = 8030 km is correct, it does not seem right to multiply the daily distance by 365 days as the scientist is not working every day of the year. On average a person will work 44 weeks each year and 5 days a week. So, 44 weeks x 5 days = 220 working days in a year. Therefore, the scientists is actually going to travel approximately 22 km x 220 days = 4840 km for work.

2. A bottle of water contains 500mL (or 500cm^3) of liquid. I fill a crate measuring 1m by 50cm by 50cm with bottles of water to take on a field trip. I estimate that the crate contains 500 bottles of water. **Does this seem right?**

Possible Answer:

Yes. 1 m = 100cm. A crate with dimensions 100cm by 50cm by 50cm will have a volume , V=250000cm^3. Therefore, the number of water bottles required to fill this crate up would be 500 (see calculation below).

$$N = \frac{250,000}{500} = 500$$

3. The number of rings a tree has on its trunk can tell you how old it is. On a tree stump I measure the distance between two adjacent rings and find that it is 0.6cm. The diameter of the stump is almost half a meter. I estimate that the tree was 42 years old when it was cut down. **Does this seem right?**

Possible Answer:

Yes. IF the diameter of the tree is almost half a meter (50cm), its radius is almost 25cm. If the tree's radius grows by 0.6cm each year, in 42 years the radius should be: 42 years x 0.6cm = 25.2cm. Double the radius to estimate the diameter: 50.4cm which is approximately half a meter.

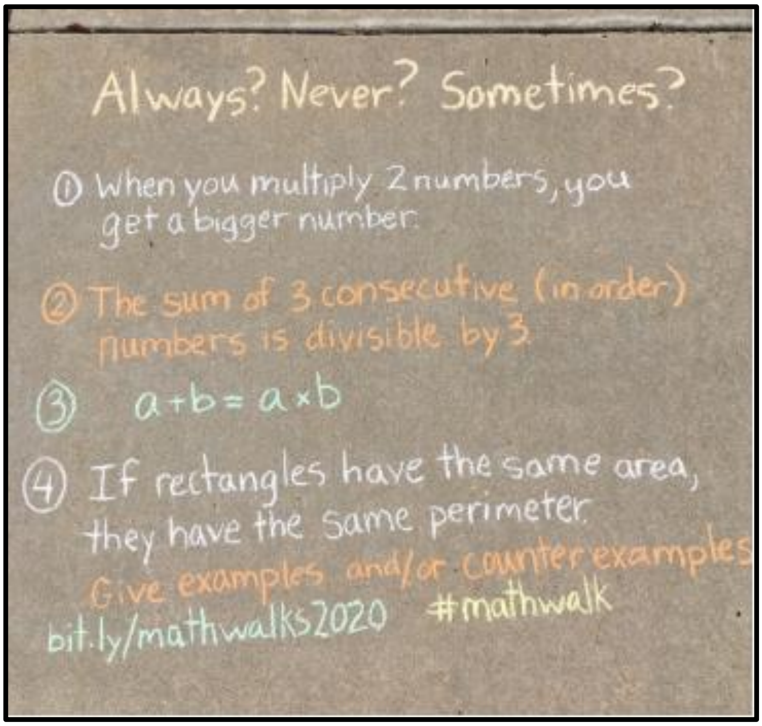
4. Today I ate a 30g packet of chips at morning break time, as I always do, so I estimate that I eat almost 11kg of chips a year. **Does this seem right?**

Possible Answer:

No. 30 g = 0.30kg. While 365 x 0.3 = 10.95kg, which is close to the estimate, it might be more realistic to assume that the scientists only eats chips on working days. Therefore, as seen above, it might be more accurate to multiply 0.3kg x 220 working days = 6.6kg of chips each year.

Source: Adapted from https://nrich.maths.org/7418

Always?, Never?, Sometimes?

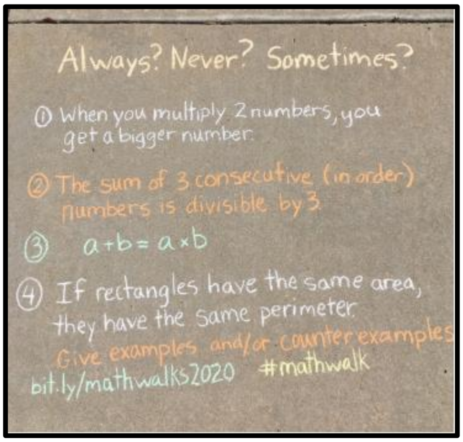


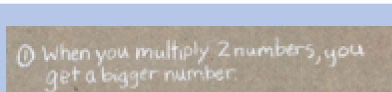
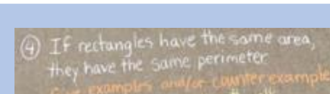
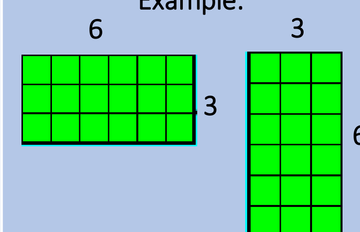
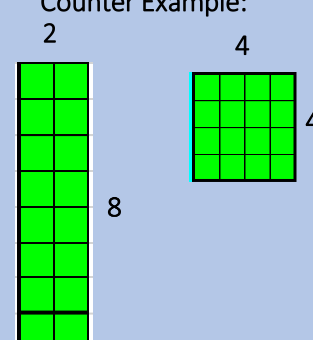
Source: https://sites.google.com/powayusd.com/math-walks/home

Always True	Sometimes True	Never True

Click [here](#) for Solutions!

Always?, Never?, Sometimes?- Solutions



Always True	 $(x) + (x + 1) + (x + 2) = 3x + 3$ $= 3(x+1)$ Any number (x) + 1 will always be multiplied by 3. If a number is multiplied by 3 it will always be divisible by 3. *E.g. 3(201+1) = 606/3 = 202*		
Sometimes True	 *Whenever you multiply a positive number by a factor greater than 1, the product will be **larger** than the original number.* E.g. 9 x 5 = 45; 45 > 9 ½ x 4 = 2; 2 > ½ *Whenever you multiply a positive number by a positive factor less than 1, the product will be **smaller** than the original number.* E.g. $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$. Both factors are less than 1, and the product is less than both factors.	 2 + 2 = 2 x 2 Can you think of any more examples that make this statement "Sometimes True?" 3 +1 ≠ 3 x 1	 Example:  Counter Example: 

Math Magic Trick!

Pick a whole number between 1 and 10.
Add 2.
Multiply by 2.
Subtract 2.
Divide by 2.
Subtract your original number.
What is your answer?

math for love

Try it again with a different number. What is your answer? How did it compare to your first answer?

Will this work for number that aren't whole numbers between 1 and 10? What numbers will it work for?

Click this link for more examples! https://safeYouTube.net/w/5HLB

Click here for a sample solution.

Source: https://mathforlove.com/lesson/math-magic-trick/

Math Magic Trick!

Source: https://mathforlove.com/lesson/math-magic-trick/

Why does this always work? Let's try it with pi (π)!

π (pick a number)
π + 2 (add 2)
2 π + 4 (multiply by 2)
2 π + 2 (subtract 2)
π + 1 (divide by 2)
1 (subtract your original number)

Did you know that we just solved this problem using **algebra!** We didn't need to know anything about the π symbol to find out that the answer was 1. In fact, π could have stood for any number, and the answer would have been the same. Wait... if π could have stood for any number and the answer is still one, then the trick works for any number! This is actually an **algebraic proof**, and it gives an argument that the trick works. Always.

Click this link for further explanation:
https://safeYouTube.net/w/oIMB

math for love

Decimal Addition

Use the digits, 0 through 9, without repeats, to complete the equation below:

$$
\begin{array}{r}
\square.\square \\
+\ \square.\square \\
\hline
\square\square.\square
\end{array}
$$

Source: https://www.openmiddle.com/decimal-addition/

Here is one possible solution:

$$
\begin{array}{r}
2.4 \\
+\ 8.5 \\
\hline
10.9
\end{array}
$$

Can you find another combination of numbers that will work?

Would You Rather?

Have a 30 acre crop planted with seeds that carry a 58% survival rate OR have a 50 acre crop planted with seeds that carry a 42% survival rate?

Explain your reasoning using mathematics.

https://www.wouldyourathermath.com/category/6to8/page/8/

Option A	**Or**	**Option B**
	Break it down	
Conclusion: I would rather		
Because …		

Click here for the solution!

Would You Rather? - Solutions

Have a 30 acre crop planted with seeds that carry a 58% survival rate OR have a 50 acre crop planted with seeds that carry a 42% survival rate?

Explain your reasoning using mathematics.

https://www.wouldyourathermath.com/category/6to8/page/8/

Option A	**Or**	**Option B**
58% of 30 acre crop: 0.58 x 30 = 17.4 acres of growth.	Break it down	42% of 50 acre crop: 0.42 x 50 = 21 acres of growth.
Conclusion: I would rather		
Because …		

Farming is not easy. There are many factors that can determine the success of a harvest. At times it must seem like you are fighting the odds.

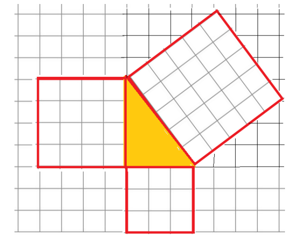
The Mohawk approached agriculture in a different way. Their key crops were “The Three Sisters” and they understood the importance of relationships, even for farming.

Watch the attached video and see if you can understand how this personification relates not only to harvesting of the “The Three Sisters” but to our relationship with each other?

[The Three Sisters Legend]()

Pythagorean Puzzle

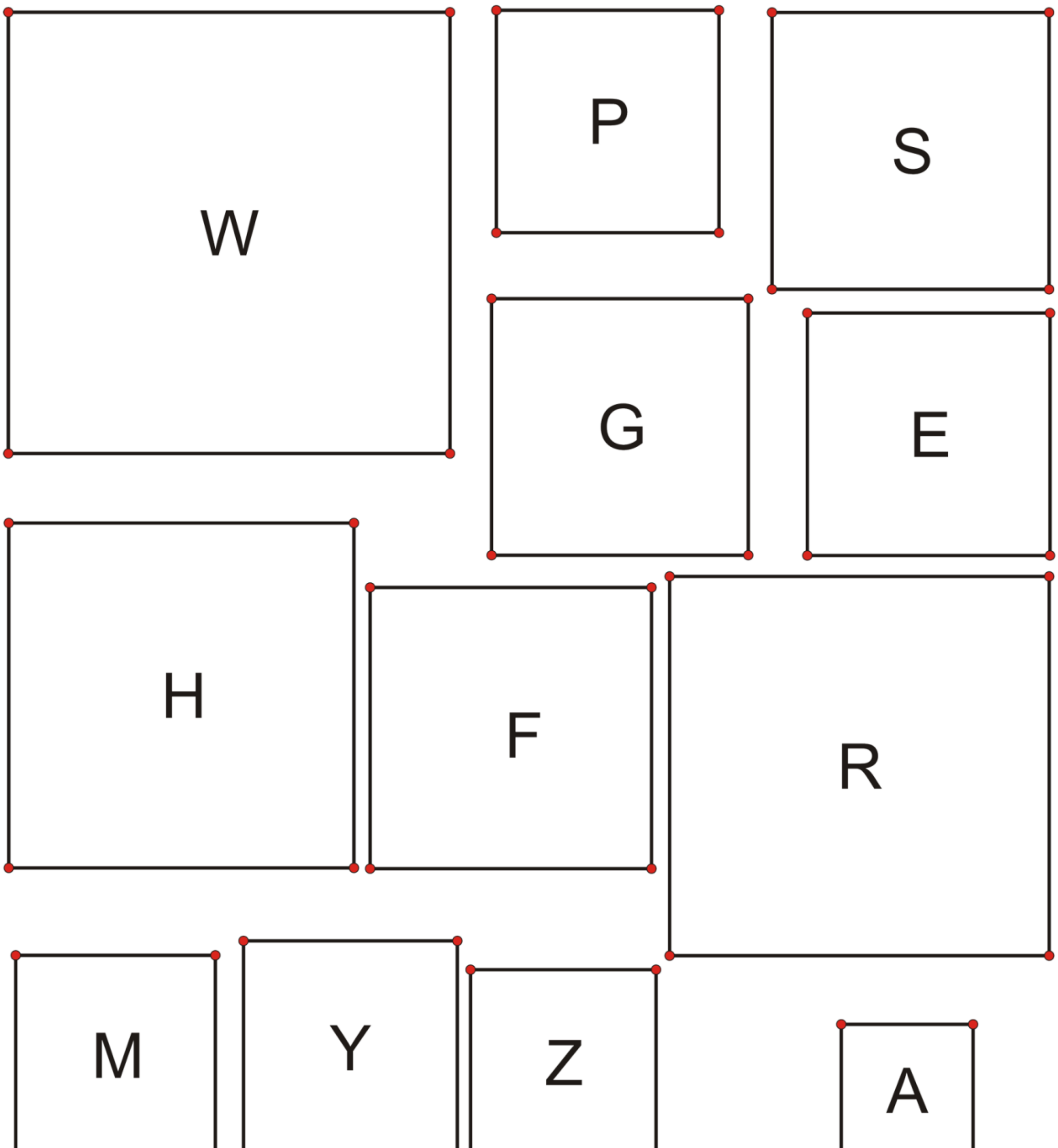
Print and Cut out the squares below. If you do not have access to a printer, follow the instructions here.



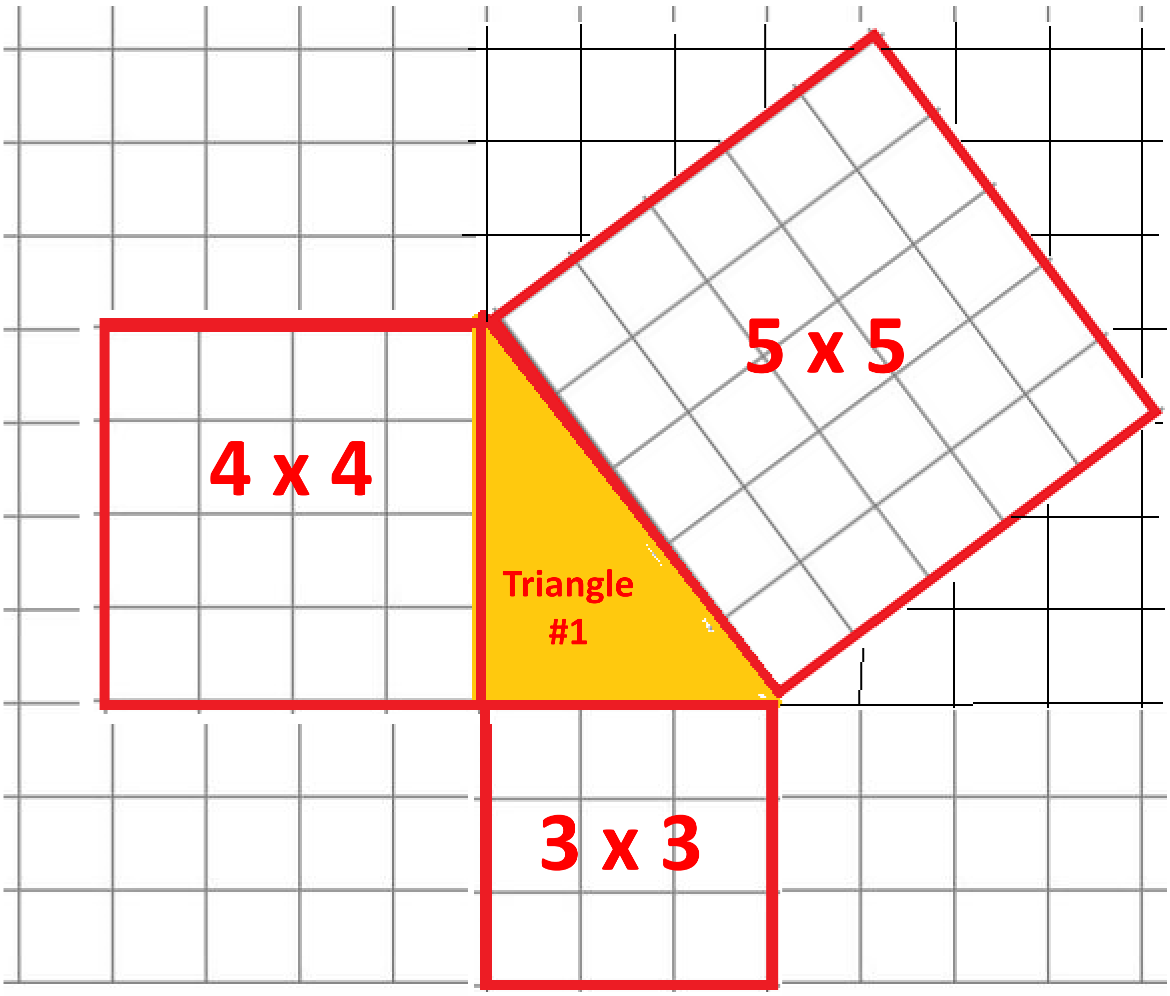
Explore which combinations of squares **will NOT** form a right-angled triangle. Use grid (graph) paper to make sure your angle is NOT 90°.

Explore which combinations of squares **will successfully form a right-angled triangle**. Use graph paper to make sure your right angle is exactly 90°. See a sample here.

1. Glue down the squares. Fill in the follow-up chart here.



Sample:



Follow-Up Chart for Pythagorean Relationship Investigation

Fill in the blanks.

Triangle #	Label of Square on Leg 1	Area of Square on Leg 1	Label of Square on Leg 2	Area of Square on Leg 2	Label of Square on Hypotenuse	Area of Square on Hypotenuse
1	4 x 4	16	3 x 3	9	5 x 5	25

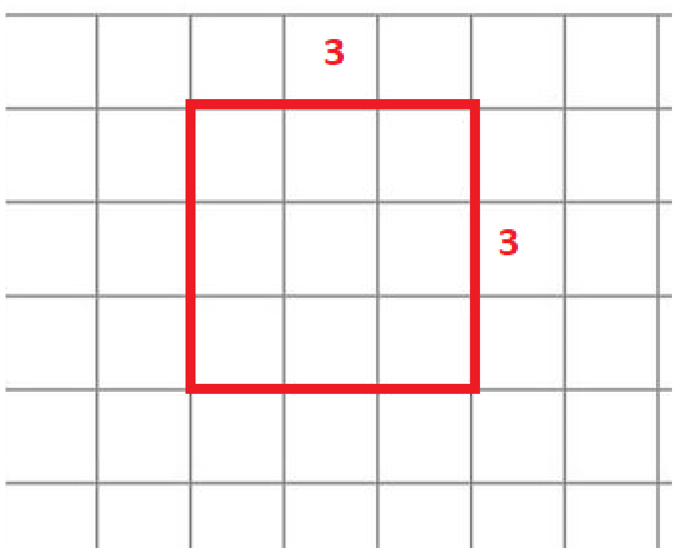
To go back to the original question page click here.

Pythagorean Puzzle

Using grid paper draw and cut out the following 9 squares (see sample below):

3 x 3	**4 x 4**	**13 x 13**
5 x 5	**8 x 8**	**12 x 12**
17 x 17	**5 x 5**	**15 x 15**

Example:



If you do not have access to grid paper, you can use a ruler to accurately measure and draw each square (ie: draw a 3cm x 3cm square).

Explore which combinations of squares will NOT form a right-angled triangle.
Use grid (graph) paper to make sure your angle is NOT 90°.

Explore which combinations of squares will successfully form a right-angled triangle.
Use graph paper to make sure your right angle is exactly 90°. See a sample here.
Glue down the squares. Fill in the follow-up chart here.

To go back to the original question page click here.

Follow-Up Chart

Fill in the blanks on the chart for the combinations of squares that will successfully form a right-angled triangle. See a sample here.

Triangle #	Label of Square on Leg 1	Area of Square on Leg 1	Label of Square on Leg 2	Area of Square on Leg 2	Label of Square on Hypotenuse	Area of Square on Hypotenuse

Add the area of the square on Leg 1 to the area of the square on Leg 2.
What pattern to you notice? How does this sum relate to the area of the square on the hypotenuse?

Test a Triangle – Is It a Right-Angled Triangle?

Test each of the following triangles and determine if the triangle is a right-angled triangle: The first one is done for you.

Side 1	Side 2	Longest side	Areas	Is this a right-angled triangle?	How do you know?
3	4	5	3^2+4^2 $=9+16$ $=25$ 5^2 $=25$	yes	$3^2+4^2=5^2$
4	6	7			
5	12	13			
8	15	17			
7	10	13			
8	12	15			
9	**40**	**41**			

Check your answers here.

Solutions

Follow-Up Chart

Fill in the blanks on the chart.

Triangle #	Label of Square on Leg 1	Area of Square on Leg 1	Label of Square on Leg 2	Area of Square on Leg 2	Label of Square on Hypotenuse	Area of Square on Hypotenuse
1	**4 x 4**	**16**	**3 x 3**	**9**	**5 x 5**	**25**

Add the area of the square on Leg 1 to the area of the square on Leg 2.
What pattern to you notice?

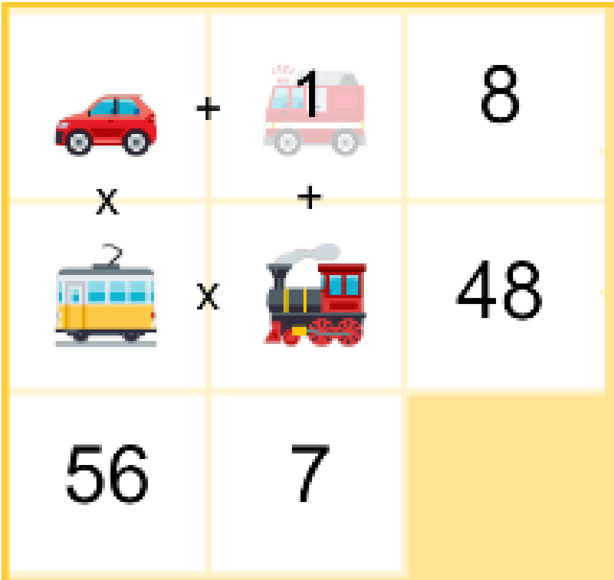
The sum of the two squares on Leg 1 and Leg 2 is equal to the area of they square on the hypotenuse. Or, $a^2 + b^2 = c^2$

Test a Triangle – Is It a Right-Angled Triangle? (Teacher)

Test each of the following triangles and determine if the triangle is a right-angled triangle:

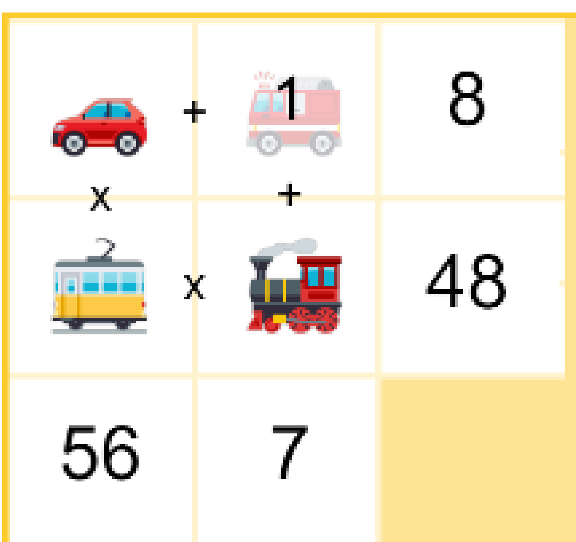
Side 1	Side 2	Longest side	Areas		Is this a right-angled triangle?	How do you know?
3	4	5	3^2+4^2 $=9+16$ $=25$	5^2 $=25$	**Yes**	$3^2+4^2=5^2$
4	6	7	4^2+6^2 $=16+36$ $=52$	7^2 $=49$	**No**	$4^2+6^2\neq7^2$
5	12	13	5^2+12^2 $=25+144$ $=169$	13^2 $=169$	**Yes**	$5^2+12^2=13^2$
8	15	17	8^2+15^2 $=64+225$ $=289$	17^2 $=289$	**Yes**	$8^2+15^2=17^2$
7	10	13	7^2+10^2 $=49+100$ $=149$	13^2 $=169$	**No**	$7^2+10^2\neq13^2$
8	12	15	8^2+12^2 $=64+144$ $=208$	15^2 $=225$	**No**	$8^2+12^2\neq15^2$
9	**40**	**41**	9^2+40^2 $=81+1600$ $=1681$	41^2 $=1681$	**Yes**	$9^2+40^2=41^2$

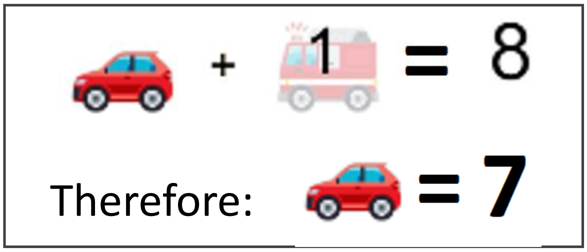
What is the value of each image?

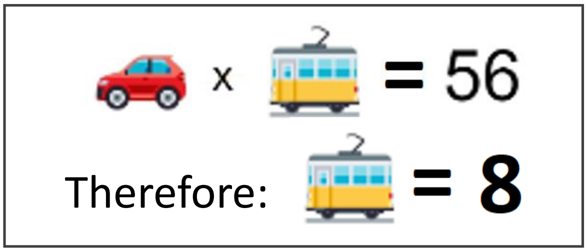


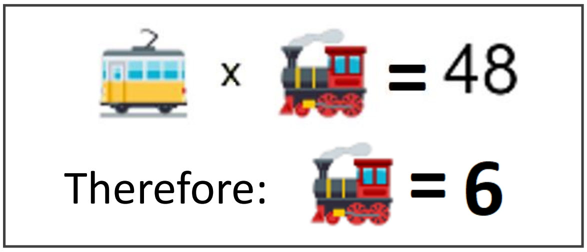
Source: https://www.solvemoji.com/

Solution:









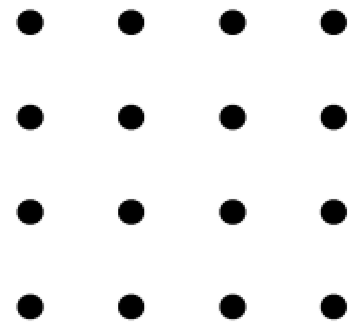
Square Counting

Source: https://mathforlove.com/lesson/square-counting/

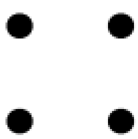
math for love

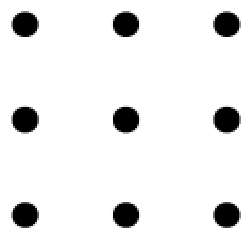
How many squares can you find in the different sized square grids if we only allow squares with horizontal/vertical sides?

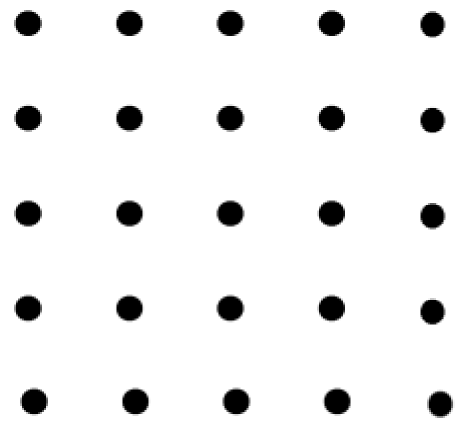
(for the squares to count, all their corners should be on the points of the grid.)



What about on a 2 by 2 grid? A 3 by 3 grid? A 5 by 5 grid?



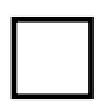


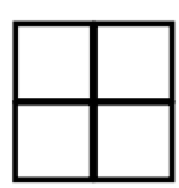


You may want to organize your answers in a chart:

Grid Size	Number of Squares
2 by 2	1
3 by 3	
4 by 4	

Or track the different sizes of grid squares on each grid (4 by 4 grid example):





1 by 1 squares: 9

2 by 2 squares: 4

3 by 3 squares: 1

Total: 1 + 4 + 9 = 14

What patterns did you notice? What about a 10 by 10 grid? Is there a quick way to calculate this, or only a slow way?

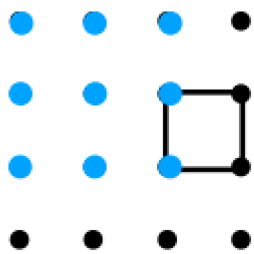
Click here for solutions!

Square Counting- Solutions

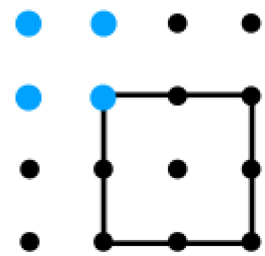
Source: https://mathforlove.com/lesson/square-counting/

4 by 4 grid

You may want to match the squares themselves to something simpler, such as a dot in their center or corner. If we mark each square with a dot in its upper left corner, for example, we'll see that there are **nine 1 by 1 squares**, since none can have their upper left corner on the bottom or right point of the grid.



Nine 1 by 1 squares.



There are four 2 by 2 squares and only one 3 by 3 square.

Therefore, the total number of squares on a 4 by 4 grid is: 9 + 4 + 1 = 14

What pattern do you notice?

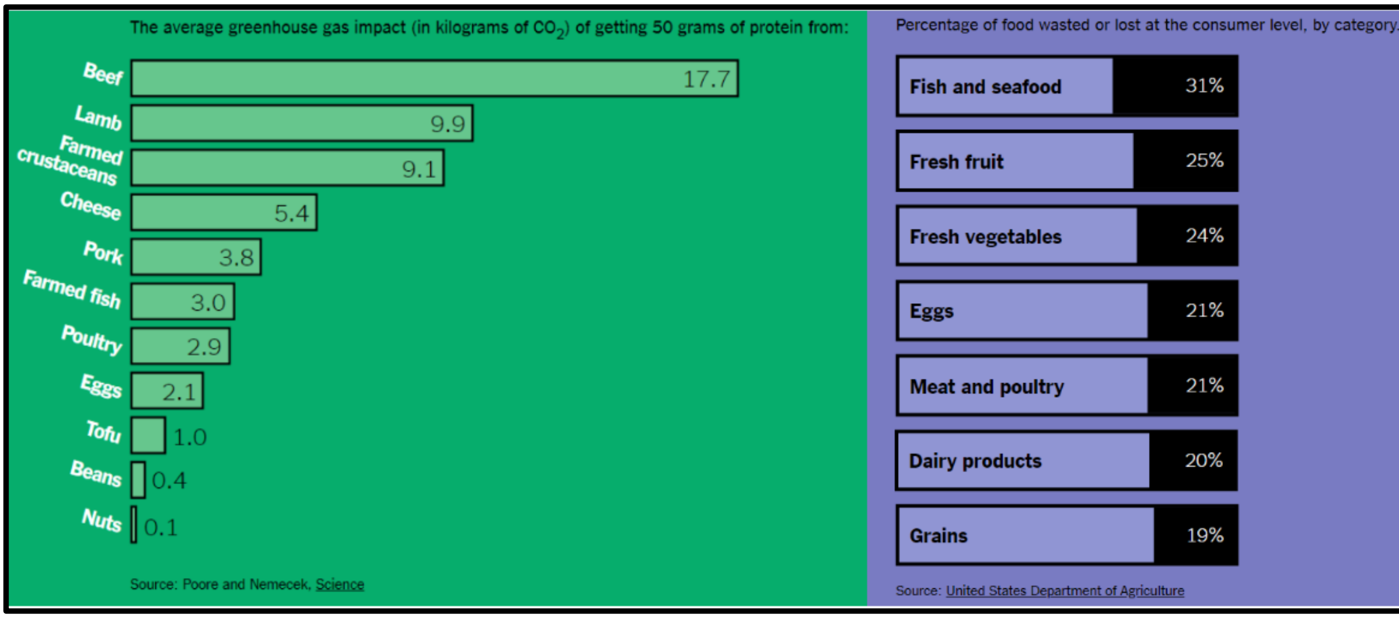
Grid Size	Number of Squares
2 by 2	1
3 by 3	5
4 by 4	14
5 by 5	30
6 by 6	55
7 by 7	91
8 by 8	140
9 by 9	204
10 by 10	285

First Difference
4 (2^2)
9 (3^2)
16 (4^2)
25 (5^2)
36 (6^2)
49 (7^2)
64 (8^2)
81 (9^2)

We could also say that the number of total squares on any size grid is always a sum of square numbers,
i.e., $1^2 + 2^2 + 3^2 + \ldots + (m-1)^2$ where m is the number of dots on a side.

What's Going on in this Graph?

What effect does what we eat, and the food we waste, have on the environment?



What do you notice? *If you make a claim, tell us what you noticed that supports your claim.*

What do you wonder? *What are you curious about that comes from what you notice in the graphs?*

What's going on in these graphs? *Write a catchy headline that captures the graphs' main idea.*

To read the article where this graph came from, click here.

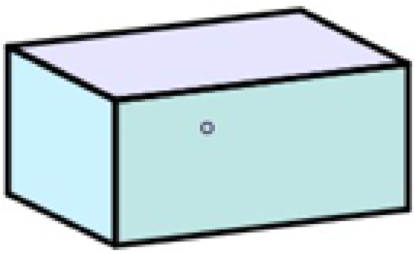
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

The New York Times

Source: https://www.nctm.org/mathforum/ and https://www.nytimes.com/2019/12/05/learning/whats-going-on-in-this-graph-dec-11-2019.html

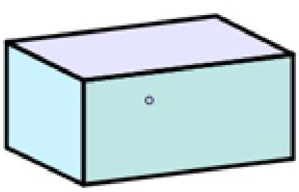
Puzzling Prisms

Find the length, width, and height of a rectangular prism that has a surface area of more than 200 square centimeters but less that 300 square centimeters.

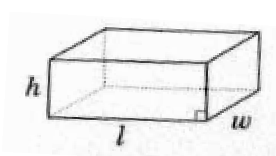


Source: Adapted from https://mathsolutions.com/at-home-learning-grades-7-8/

Here is one possible solution:

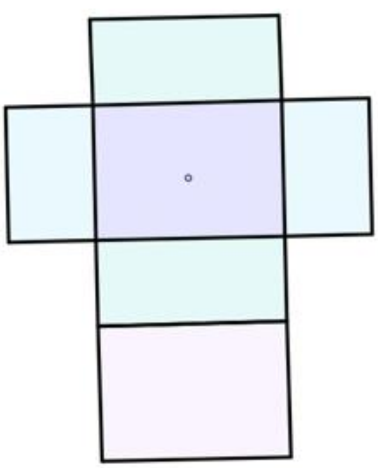


The formula for calculating surface area of a rectangular prism is: $A = 2(wh + lw + lh)$



$w = 5;\ h = 5;\ l = 10$

$$A = 2(wh + lw + lh)$$
$$A = 2\big((5)(5) + (10)(5) + (10)(5)\big)$$
$$A = 2(25 + 50 + 50)$$
$$A = 2(125)$$
$$A = 250$$



It might be useful to visualize the net when determining surface area.

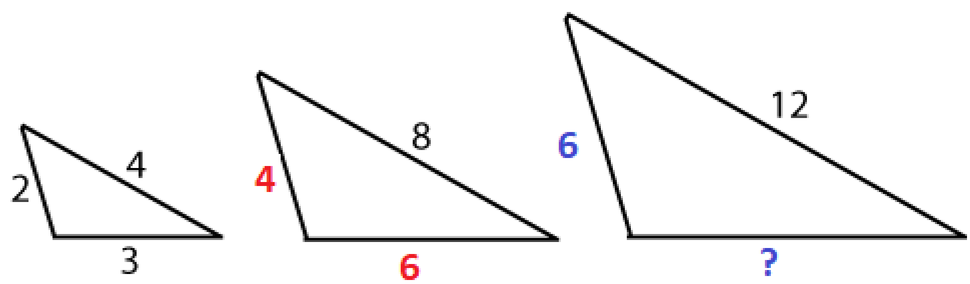
Can you find another possible solution that will work?

Number the Sides

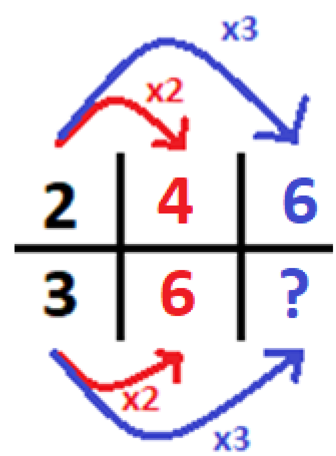
Watch this Intro to Similar Triangles video from Khan Academy.

'Similar' means that the triangles are exactly the same shape, but not the same size. The sides are in the same ratio to each other. Note that these triangles are not drawn to scale.

What can you say about the length of the side of the third triangle which is marked with a question mark?



This question can be solved by setting up a ratio table using the two shorter side lengths from each triangle:



The value of the question mark is 3 x 3 or 9.

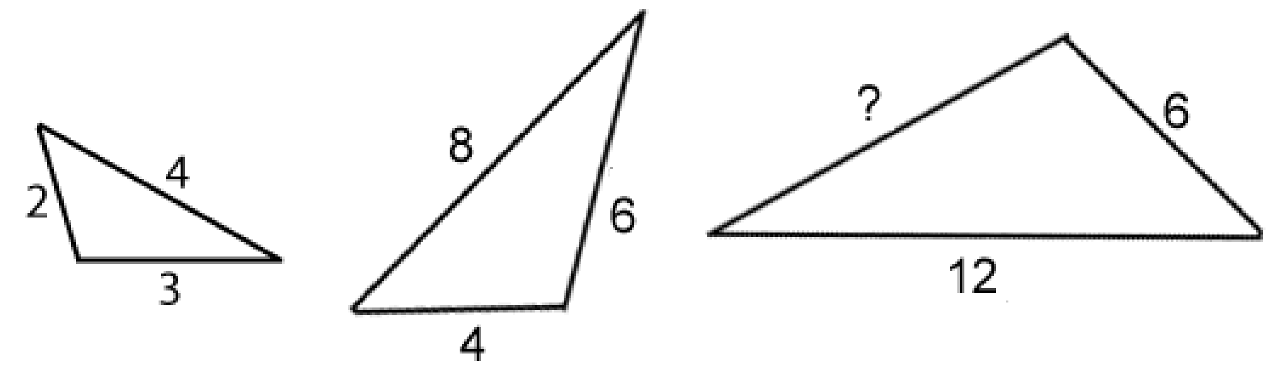
Try some similar questions here.

Source: https://nrich.maths.org/5639

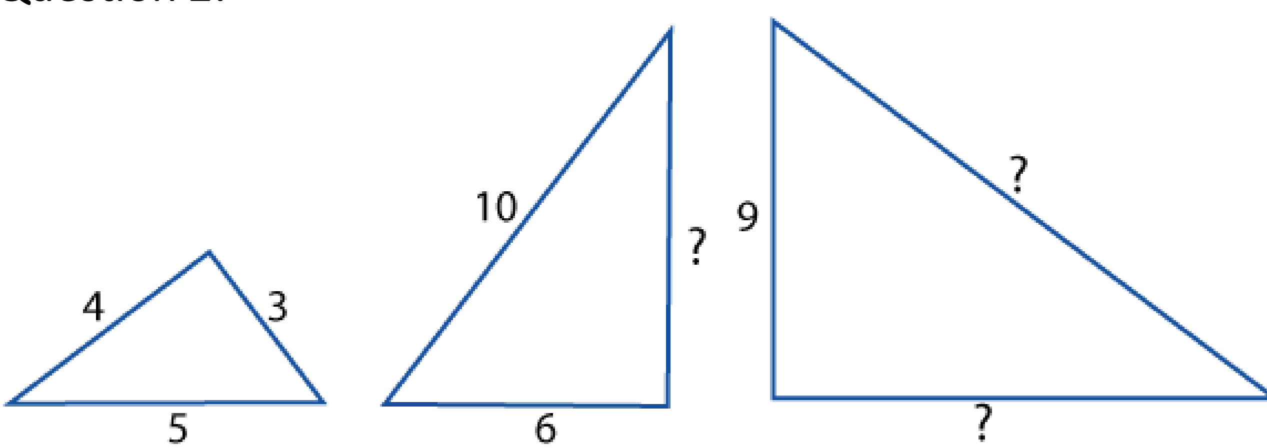
Number the Sides

Can you work out the lengths of the sides marked with a question mark in each of the following? Hint: it may help to redraw the triangles in the same orientation.

Question 1:



Question 2:



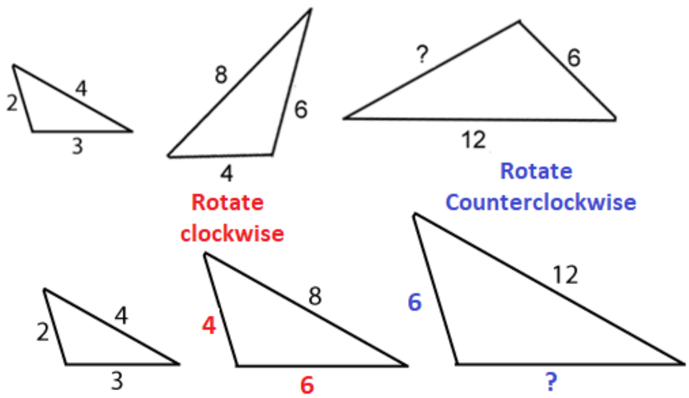
Check your solutions here.

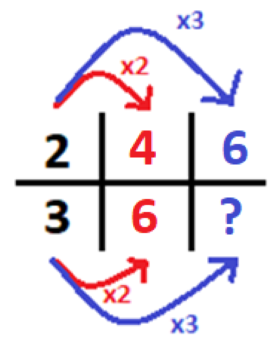
Source: https://nrich.maths.org/5639

Number the Sides Solutions

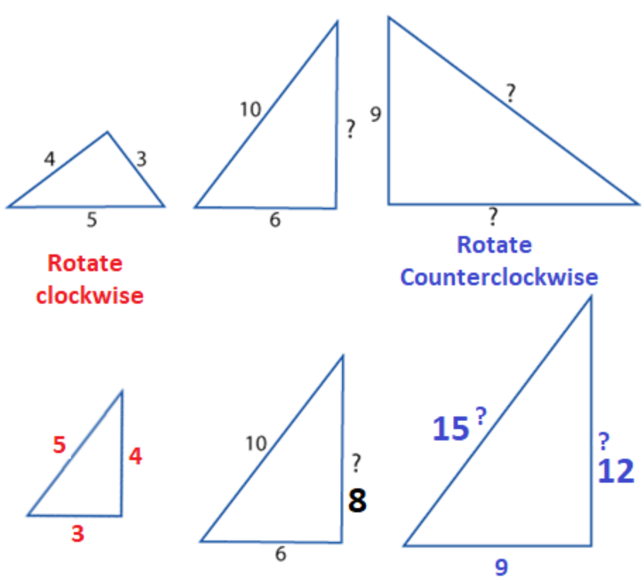
Question 1:

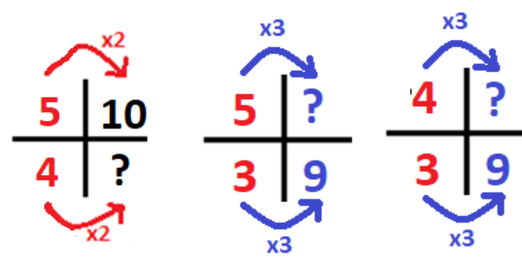
This is the same as the previous question with the triangles rotated. The unknown side length is 9.





Question 2:





The three unknown side lengths are 8, 15 and 12 (as seen on the diagram).

Source: https://nrich.maths.org/5639

Math 7 -8 Activities Menu G
Curriculum Expectations

	A	B	C
Estimation	Estimation 180 Number Sense and Numeration **Grade 7** *Specific*: Use estimation when solving problems involving operations with whole numbers decimals, and percents, to help judge the reasonableness of a solution. **Grade 8** *Specific:* Use estimation when solving problems involving operations with whole numbers, decimals, percents, integers, and fractions, to help judge the reasonableness of a solution.	Does This Sound about Right? Measurement **Grade 7** *Specific*: Solve problems that require conversion between metric units of measure (e.g., millimetres and centimetres, grams and kilograms, millilitres and litres). **Grade 8** *Specific:* Solve problems that require conversions involving metric units of area, volume, and capacity.	Always? Never? Sometimes? Mathematical Processes **Reasoning and Proving** Develop and apply reasoning skills to make mathematical conjectures, assess conjectures and justify conclusions, and plan and construct organized mathematical arguments. **Reflecting** Demonstrate that they are reflecting on and monitoring their thinking to help clarify their understanding as they complete an investigation or solve a problem.
Working with Numbers	Math Magic Trick Number Sense and Numeration **Grade 7 & 8** *Specific:* solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools and strategies; evaluate expressions that involve whole numbers and decimals, including expressions that contain brackets, using order of operations. **Mathematical Process- Reasoning and Proving** Develop and apply reasoning skills (e.g., recognition of relationships, generalization through inductive reasoning, use of counter-examples) to make mathematical conjectures, assess conjectures and justify conclusions, and plan and construct organized mathematical arguments;	Decimal Addition Number Sense and Numeration **Grade 7** *Specific:* Use a variety of mental strategies to solve problems involving the addition and subtraction of fractions and decimals. **Grade 8** *Overall:* Solve problems involving whole numbers, decimal numbers, fractions, and integers, using a variety of computational strategies.	Would You Rather? Number Sense and Numeration **Grade 7** *Specific:* solve problems that involve determining whole number percents, using a variety of tools. *Specific:* solve problems involving percent that arise from real-life contexts.
Activities / Puzzles	Pythagorean Puzzle Geometry and Spatial Sense **Grade 8** *Specific*: Determine the Pythagorean relationship through investigation. *Specific*: Solve problems involving right triangles geometrically, using the Pythagorean relationship. Number Sense and Numeration **Grade 7** *Specific:* Represent perfect squares and square roots, using a variety of tools.	What is the value of each image? Patterning and Algebra **Grade 7** *Specific*: Solve linear equations of the form ax = c or c = ax and ax + b = c or variations such as b + ax = c and c = bx + a (where a, b and c are natural numbers) by modelling with concrete materials, by inspection, or by guess and check, with and without the aid of a calculator. **Grade 8** *Specific:* Solve and verify linear equations involving a one-variable term and having solutions that are integers, by using inspection, guess and check, and a "balance" mode.	Square Counting Patterning and Algebra **Grade 7** *Specific*: compare pattern rules that generate a pattern by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term with pattern rules that use the term number to describe the general term. **Mathematical Process- Problem Solving** develop, select, apply, and compare a variety of problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding;
Problems	What's Going on in this Graph? Data Management and Probability **Grade 7 & 8** *Specific:* read, interpret, and draw conclusions from primary data and from secondary data presented in charts, tables, and graphs; make inferences and convincing arguments that are based on the analysis of charts, tables, and graphs.	Puzzling Prisms Measurement **Grade 7** *Specific:* Determine, through investigation using a variety of tools, the surface area of right prisms. *Specific:* Solve problems that involve the surface area and volume of right prisms and that require conversion between metric measures of capacity and volume.	Number The Sides Geometry and Spatial Sense **Grade 7** *Specific*: Demonstrate an understanding that enlarging or reducing two-dimensional shapes creates similar shapes. **Grade 8** *Specific*: Determine, through investigation using a variety of tools, relationships among area, perimeter, corresponding side lengths, and corresponding angles of similar shapes.
Technology	All in a Jumble Mathematical Processes Develop and apply reasoning skills to make mathematical conjectures, assess conjectures and justify conclusions, and plan and construct organized mathematical arguments.	Math Visuals Number Sense and Numeration **Grade 7 & 8** *Specific Expectations:* solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools and strategies	Twin Puzzles Number Sense and Numeration **Grade 7** *Specific*: Evaluate expressions that involve whole numbers and decimals, including expressions that contain brackets, using order of operations. **Grade 8** *Specific*: Evaluate expressions that involve integers, including expressions that contain brackets and exponents, using order of operations.