

NEWSLETTER

THE OFFICIAL MATHROVER ENGLISH NEWSLETTER

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Greetings!

With the holidays rapidly approaching, the Mathrover team wants to wish you a Merry Christmas and a Happy New Year. The season of giving is here, but we are also in the month of relaxing and enjoying time with family and friends. You know what's perfect for time of year? A steaming cup of hot chocolate, a warm fireplace, and of course, the December issue of our newsletter to pass the time. We hope you enjoy!



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Peppermint Bark Recipe

By: Gladys

Ingredients:

- 25 mini candy canes
- 4 cups chocolate chips
- ½ teaspoon peppermint extract
- 3 cups white chocolate chip

(Makes 15 servings)



1. Put mini candy canes in a plastic bag and crush into small pieces
2. Melt chocolate chips in a bowl and mix together peppermint extract
3. Evenly pour it on parchment paper and freeze for 5 mins
4. Evenly pour melted white chocolate over the frozen chocolate
5. Sprinkle with the crushed candy canes over the chocolate
6. Freeze for at least an hour
7. Break into pieces to enjoy with friends!

The Mortality Crisis

By: Adila

At this moment in time, you are a physical being. A moving, breathing life form found on the surface of a massive rock hurtling indefinitely through space and time. You are what you appear as in the minds of other people, all of which differ slightly, however can be seen as accurate nonetheless. You are a being brought forth into this world through some degree of chance, and therefore, you were once just a mere possibility.

That small possibility of your entire existence gradually became a certainty, and it's the reason why you are here today. This being said, the most important question still remains: what will you be after all of this is over?

Some may see life as a slow progression towards death, while others choose to think of it as a marathon away from birth. No matter your perspective, it is undeniable that, on this Earth, you once had a beginning and you will eventually have an end. But what does the end really mean for your existence?

The Mortality Crisis

(continued...)

By: Adila

Is it truly just the mere halting of your bodily functions and your eventual decomposition? Well for many, that may very well be the case; your close ones will mourn your passing, but eventually, no one will ever know about you or that you, as an individual, once existed.

The genuine realization of one's own mortality and their objective insignificance often brings about a new way of thinking, most notably one

questions how one should live. How could you put all your hope into living a happy future when the present might be all you have? But, by that same logic, how could you live solely in the present when you have a potential future to account for? It is possible to find a balance between the two, however will taking that path provide you with true fulfillment? To this question, there is no correct answer; the way you choose to live is purely up to you. At the end of the day, you are the author and main character of your own story, so write a life you won't regret living.

A Christmas Story

By: Rachael

Christmas, celebrated by many around the world, has its origins dating back centuries. It has both Roman and pagan origins. On December 25, Christians celebrate the birth of Jesus Christ, however, many of the ideas we relate to Christmas are from the pagans that celebrated the winter solstice. As the days after the winter solstice gradually become longer, evergreen trees symbolized the "return of light." The people hung apples on the trees, similar to what many families do today with ornaments. The colour green was used by the pagans in anticipation of spring.

The winter solstice is when the Earth's North Pole points the furthest away from the sun. In Ancient Rome, Saturnalia was celebrated starting from the week before the winter solstice and was a month filled with food, drink, and freedom. Slaves were liberated and school and work were halted for everyone to participate in the activities.



A Christmas Story

(continued...)

By: Rachael

A few centuries after “Christmas” started being celebrated, Jesus was born. Although the date of Jesus’s birth was not recorded anywhere, Pope Julius I chose December 25. They took inspiration from many Pagan traditions, creating a popular holiday on December 25. Christmas got so popular that the Puritans banned Christmas in America from 1659 to 1681; citizens were actually fined if festive activities were carried out.

Regardless of the past and the history of this joyous holiday, the freedom we have today is something that should be celebrated in and of itself. No matter how you choose to pass your Christmas, we wish you a wonderful, and excitement-filled holiday!





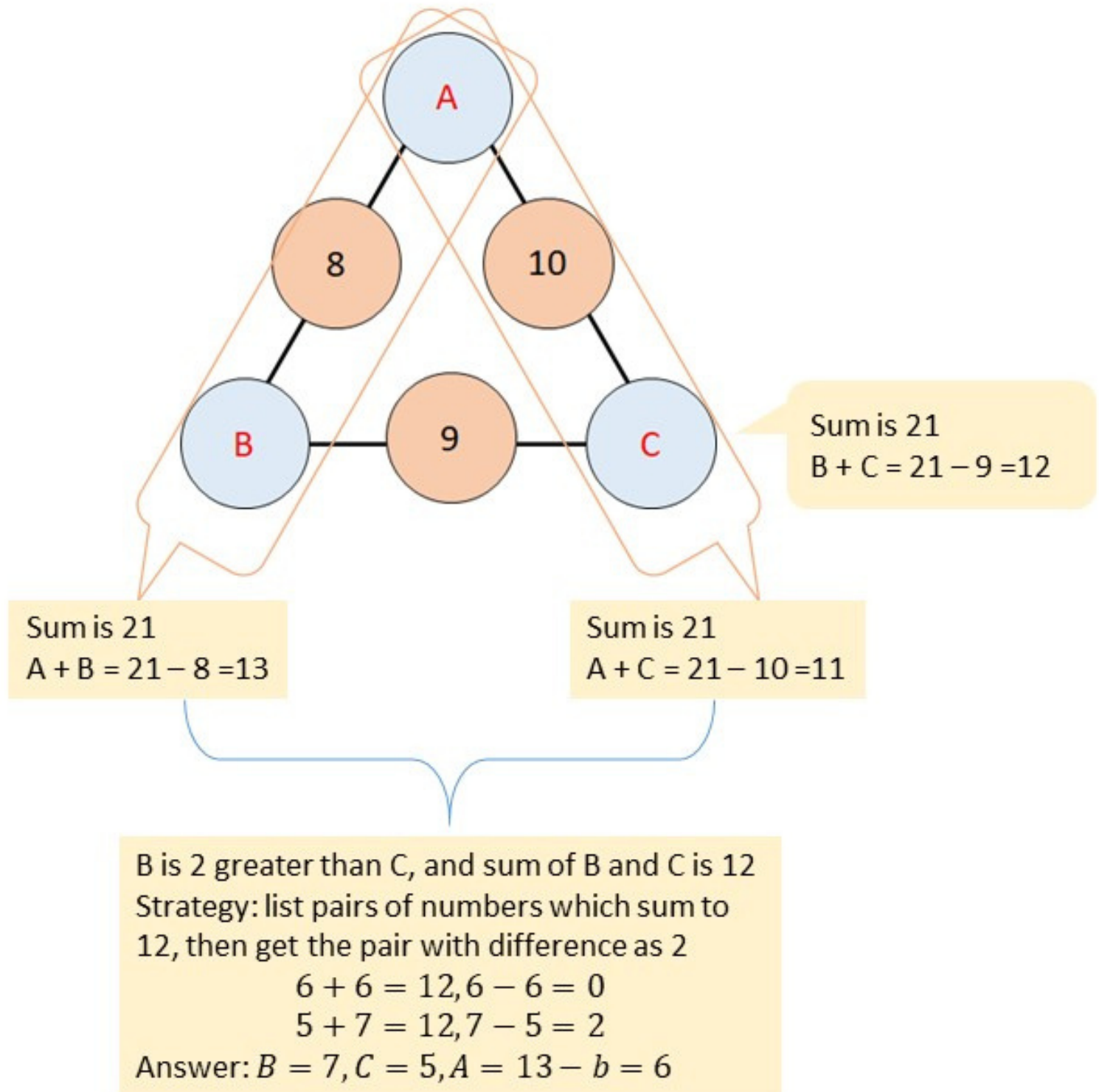
Fun Math Winners

**Congratulations to
Kristin, Curtis, Nolan, Murray,
George and Chloe**

**Please contact Mathrover to
claim your prize!**

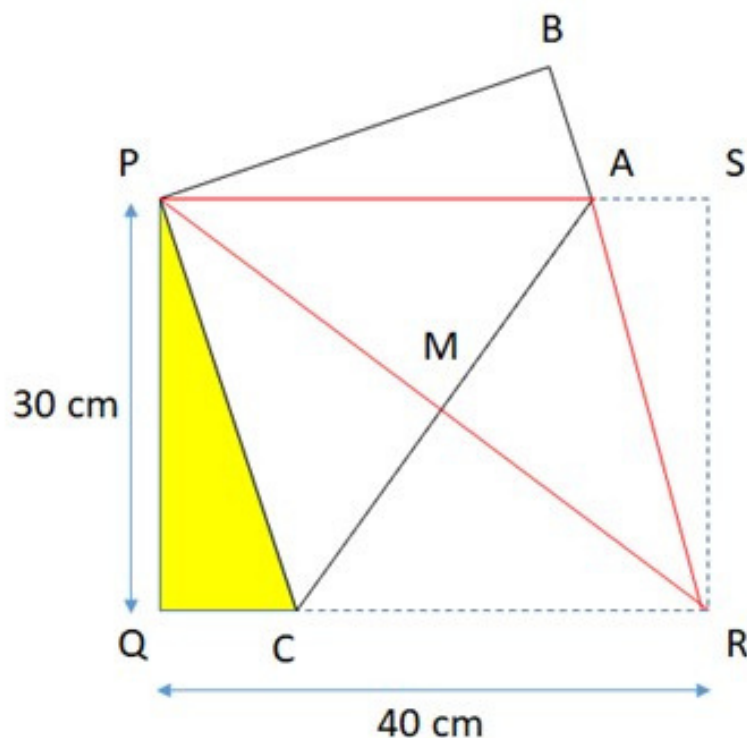
Fill circles with correct numbers

Fill in appropriate numbers in the circles so that sum of the numbers on each side equal to 21.



Fold Once

A rectangular piece of paper, PQRS, has $PQ = 30$ cm and $PS = 40$ cm. The paper has YELLOW color on one side and is plain white on the other. The paper is folded so that the two diagonally opposite corners P and R coincide. This creates a crease along line segment AC, with A on PS and C on QR. Determine the length of AC



Solution 1

Given $PC = CR$ and $AP = AR$ and $AP \parallel CR$
 $\angle APB + \angle APC = \angle CPQ + \angle APC = 90^\circ$,
 so $\angle APB = \angle APC = \angle ARS$, hence $PC \parallel AR$
 $APCR$ is a rhombus, so the diagonals right bisect each other at M

$$PR = \sqrt{PQ^2 + QR^2} = \sqrt{30^2 + 40^2} = 50$$

$$\text{Area of } \triangle ACR = \frac{1}{2}(CR)(SR) = \frac{1}{2}(AC)(MR)$$

$$CR \times 30 = AC \times 25, \text{ or } CR = \frac{5}{6}AC$$

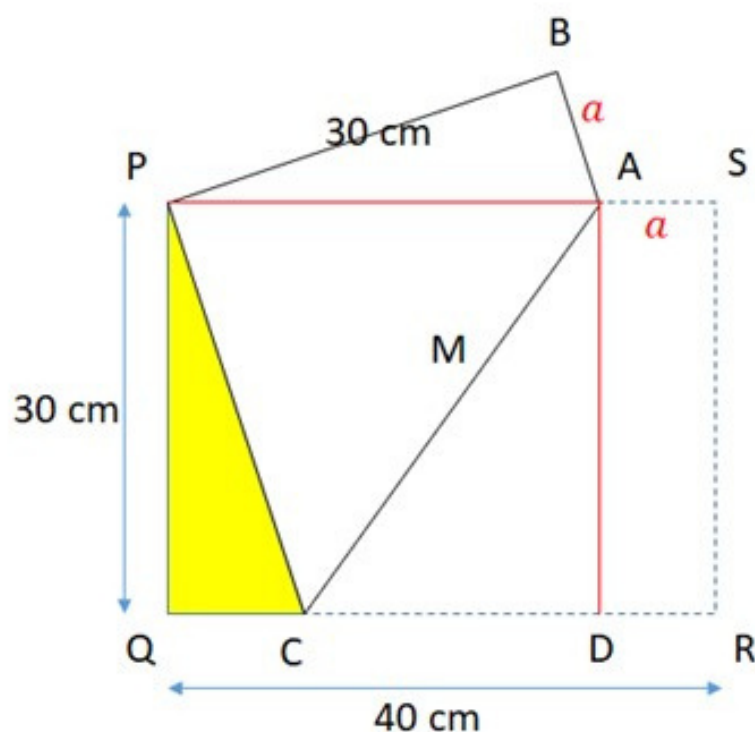
Apply Pythagorean in $\triangle MCR$: $CR^2 - MC^2 = MR^2$

$$\left(\frac{5}{6}AC\right)^2 - \left(\frac{1}{2}AC\right)^2 = 25^2, \quad \frac{4}{9}(AC)^2 = 25^2$$

$$AC = \frac{25 \times 3}{2} = 37.5 \text{ cm}$$

Fold Once

A rectangular piece of paper, PQRS, has PQ = 30 cm and PS = 40 cm. The paper has YELLOW color on one side and is plain white on the other. The paper is folded so that the two diagonally opposite corners P and R coincide. This creates a crease along line segment AC, with A on PS and C on QR. Determine the length of AC



Solution 2

Set $AS = AB = a$, then $AP = 40 - a$

Apply Pythagorean in $\triangle ABP$: $AP^2 = BP^2 + AB^2$

$$(40 - a)^2 = 30^2 + a^2 \text{ solve } a = \frac{35}{4}$$

$\angle BPA + \angle APC = 90^\circ = \angle QPC + \angle APC, \angle BPA = \angle QPC$

$\triangle QPC$ and $\triangle BPA$ are congruent. $OC = AB = a$

$$CD = 40 - 2a$$

Apply Pythagorean in $\triangle ACD$: $AC^2 = CD^2 + AD^2$

$$AC^2 = 30^2 + (40 - 2a)^2 = 30^2 + \left(40 - \frac{35}{2}\right)^2 = 15^2 \left(\frac{5^2}{2^2}\right)$$

$$AC = \sqrt{15^2 \left(\frac{5^2}{2^2}\right)} = \frac{15 \times 5}{2} = 37.5 \text{ cm}$$