



**THIRD SPACE
LEARNING**

25 Math Problems

25 fun math problems for
elementary and middle school

Elementary and Middle School

Questions

- 1 A movie theater screening starts at 2:35pm. The movie lasts for 2 hours, 32 minutes after 23 minutes of previews. It takes 20 minutes to get home from the movie theater. What time should you tell your family that you'll be home?

Answer

- 2 Chicken nuggets come in boxes of 6, 9 or 20, so you can't order 7 chicken nuggets. How many other impossible quantities can you find (not including fractions or decimals)?

Answer

- 3 Eight of my pets aren't dogs, five aren't rabbits, and seven aren't cats. How many pets do I have?

Answer

- 4 A mouse costs \$10, a bee costs \$15, and a spider costs \$20. Based on this, how much does a duck cost?

Answer

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- 5 Roll three 6 sided dice to generate three place value digits. What's the biggest number you can make out of these digits? What's the smallest number you can make? Add these two numbers together. What do you get?

Answer

- 6 I've forgotten my PIN. Six incorrect attempts locks my account: I've used five! Two digits are displayed after each unsuccessful attempt: "2, 0" means 2 digits from that guess are in the PIN, but 0 are in the right place. No two digits in my PIN are the same.

What should my sixth attempt be?

1 2 3 4	2, 0
3 4 5 6	3, 0
5 8 9 0	0, 0
2 3 0 4	2, 1
6 2 4 1	2, 2
? ? ? ?	

Answer

- 7 On the first day of Christmas my true love gave me one gift. On the second day they gave me another pair of gifts plus a copy of what they gave me on day one. On day 3, they gave me three new gifts, plus another copy of everything they'd already given me. If they keep this up, how many gifts will I have after twelve days?

Answer

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- 8 Using only addition and the digit 8, can you make 1,000? You can put 8s together to make 88, for example.

Answer

- 9 4 friends entered a math quiz. One answered $\frac{1}{5}$ of the math questions, one answered $\frac{1}{10}$, one answered $\frac{1}{4}$, and the other answered $\frac{4}{25}$. What percentage of the questions did they answer altogether?

Answer

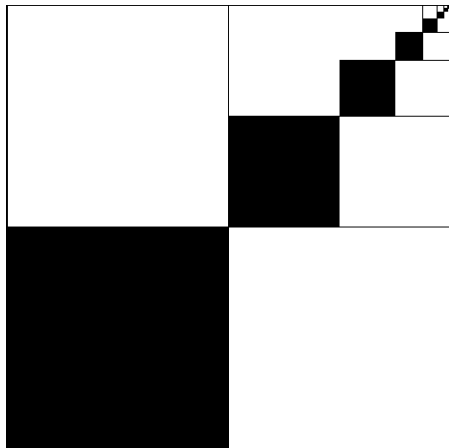
- 10 Ancient Egyptians only used unit fractions (like $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$). For $\frac{2}{3}$, they'd write $\frac{1}{3} + \frac{1}{3}$. How might they write $\frac{5}{8}$?

Answer

- 11 An infinite number of mathematicians buy pizza. The first wants $\frac{1}{2}$ pizza. The second wants $\frac{1}{4}$ pizza. The third wants $\frac{1}{8}$ and the fourth wants $\frac{1}{16}$, and so on. How many pizzas should they order?

Answer

12 What fraction of this image is shaded black?



Answer

13 5 people give each other a present. How many presents are given altogether?

Answer

14 I have 20 sweets. If I share them equally with my friends, there are 2 left over. If one more person joins us, there are 6 sweets left. How many friends am I with?

Answer

15 Here are 77 letters:

BYHRCGNEOEAAHGCURPUTSASHHSBOREOPEEMEEL
ATPEFADPHLTUTIEEOHLENRYTIIAGBMTNFCGEIIG

How many different rectangular grids could you arrange all 77 letters into?
Can you reveal the secret message?

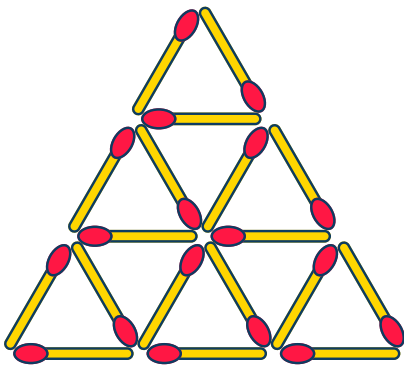
Answer

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- 16 One friend jumps every $\frac{1}{3}$ of a minute. Another jumps every 31 seconds. When will they jump together?

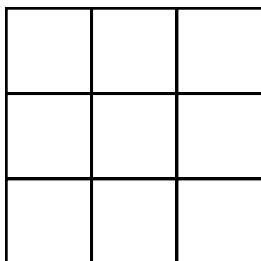
Answer

- 17 Look at the matchsticks arranged below. How many equilateral triangles are there?



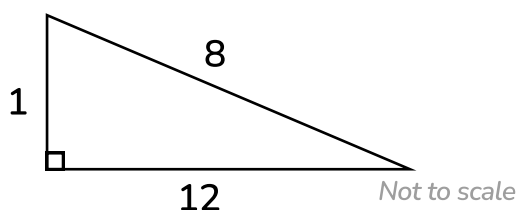
Answer

- 18 What's the smallest number of straight lines you could draw on this grid such that each square has a line going through it?



Answer

- 19 This triangle does not agree with Pythagoras' theorem. Adding, subtracting, multiplying or dividing each of the side lengths by the same integer can fix it. What is the integer?



Answer

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- 20 What is the regular polygon with the largest number of sides that will self-tessellate?

Answer



-
- 21 5 people meet; each shakes everyone else's hand once. How many handshakes take place?

Answer



-
- 22 When I was twelve my brother was half my age. I'm 40 now, so how old is he?

Answer

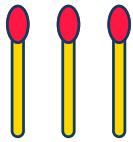


-
- 23 When is " $8 + 10 = 6$ " true?

Answer



24 Here are three matches:



How can you add two more matches, but get eight?

Answer

25 Leonhard's town has seven bridges as shown below. Can you find a route around the town that crosses every bridge exactly once?

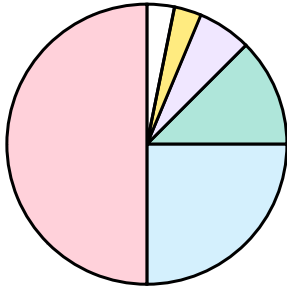


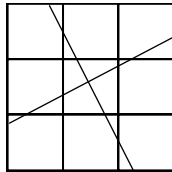
Answer

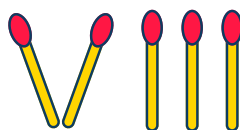
Answers

Question Number	Question	Answer
1	A movie theater screening starts at 2:35pm. The movie lasts for 2 hours, 32 minutes after 23 minutes of previews. It takes 20 minutes to get home from the movie theater. What time should you tell your family that you'll be home?	6:10pm 2 hours + 32 mins + 23 mins + 20 mins = 3 hours 15 mins 2:35pm + 3 hours 15 mins = 5:50pm
2	Chicken nuggets come in boxes of 6, 9 or 20, so you can't order 7 chicken nuggets. How many other impossible quantities can you find (not including fractions or decimals)?	1, 2, 3, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 22, 23, 25, 28, 31, 34, 37, or 43
3	Eight of my pets aren't dogs, five aren't rabbits, and seven aren't cats. How many pets do I have?	10 pets (5 rabbits, 3 cats, 2 dogs)
4	A mouse costs \$10, a bee costs \$15, and a spider costs \$20. Based on this, how much does a duck cost?	\$5 (\$2.50 per leg)
5	Roll three 6-sided dice to generate three place value digits. What's the biggest number you can make out of these digits? What's the smallest number you can make? Add these two numbers together. What do you get?	Various Solutions. If the digits are the same, the maximum is 666 and the minimum is 111. $666 + 111 = 777$ If the digits are different, the maximum is 654 and the minimum is 123. $654 + 123 = 777$

Question Number	Question	Answer
6	I've forgotten my PIN. Six incorrect attempts locks my account: I've used five! Two digits are displayed after each unsuccessful attempt: "2, 0" means 2 digits from that guess are in the PIN, but 0 are in the right place. No two digits in my PIN are the same. What should my sixth attempt be?	6347
7	On the first day of Christmas my true love gave me one gift. On the second day they gave me another pair of gifts plus a copy of what they gave me on day one. On day 3, they gave me three new gifts, plus another copy of everything they'd already given me. If they keep this up, how many gifts will I have after twelve days?	364
8	Using only addition and the digit 8, can you make 1,000? You can put 8s together to make 88, for example.	$888 + 88 + 8 + 8 + 8 = 1,000$
9	4 friends entered a math quiz. One answered $\frac{1}{5}$ of the math questions, one answered $\frac{1}{10}$, one answered $\frac{1}{4}$, and the other answered $\frac{4}{25}$. What percentage of the questions did they answer altogether?	71%
10	Ancient Egyptians only used unit fractions (like $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$). For $\frac{2}{3}$, they'd write $\frac{1}{3} + \frac{1}{3}$. How might they write $\frac{5}{8}$?	$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ is correct. So is $\frac{1}{2} + \frac{1}{8}$

Question Number	Question	Answer
11	An infinite number of mathematicians buy pizza. The first wants $\frac{1}{2}$ pizza. The second wants $\frac{1}{4}$ pizza. The third & fourth want $\frac{1}{8}$ and $\frac{1}{16}$ each, and so on. How many pizzas should they order?	1 Each successive mathematician wants a slice that is exactly half of what is left: 
12	What fraction of this image is shaded black?	$\frac{1}{3}$ Look at the L-shaped part made up of two white and one black squares: $\frac{1}{3}$ of this part is shaded. Zoom in on the top-right quarter of the image, which looks exactly the same as the whole image, and use the same reasoning to find what fraction of its L-shaped portion is shaded. Imagine zooming in to do the same thing again and again...
13	5 people give each other a present. How many presents are given altogether?	20
14	I have 20 sweets. If I share them equally with my friends, there are 2 left over. If one more person joins us, there are 6 sweets left. How many friends am I with?	6 people altogether (so 5 friends!)

Question Number	Question	Answer
15	Here are 77 letters: BYHRCGNEOEAAHGCUR PUTSASHHSBOREOPEE MEELATPEFADPHLTUTIE EOHLENRYTIIAGBMTNF CGEIIIG How many different rectangular grids could you arrange all 77 letters into? Can you reveal the secret message?	Four: 1×77, 77×1, 11×7 and 7×11. The secret message appears, reading down each column starting from the top left in the $7(w) \times 11(h)$ grid. <pre> B Y H R C G N E O E A A H G C U R P U T S A S H H S B O R E O P E E M E E L A T P E F A D P H L T U T I E E O H L E N R Y T I I A G B M T N F C G E I I G </pre>
16	One friend jumps every $\frac{1}{3}$ of a minute. Another jumps every 31 seconds. When will they jump together?	After 620 seconds
17	Look at the matchsticks arranged below. How many equilateral triangles are there?	13 (9 small, 3 medium, 1 large)
18	What's the smallest number of straight lines you could draw on this grid such that each square has a line going through it?	2 
19	This triangle does not agree with Pythagoras' theorem. Adding, subtracting, multiplying or dividing each of the side lengths by the same integer can fix it. What is the integer?	3 $3 \times 1 = 3$ $8 - 3 = 5$ $12 \div 3 = 4$ The new side lengths are 3, 4 and 5 and $3^2 + 4^2 = 5^2$.

Question Number	Question	Answer
20	What is the regular polygon with the largest number of sides that will self-tessellate?	Hexagon. Regular polygons tessellate if one interior angle is a factor of 360° . The interior angle of a hexagon is 120° . This is the largest factor less than 180° .
21	5 people meet; each shakes everyone else's hand once. How many handshakes take place?	10 Person A shakes 4 people's hands. Person B has already shaken Person A's hand, so only needs to shake 3 more, and so on.
22	When I was twelve my brother was half my age. I'm 40 now, so how old is he?	34
23	When is " $8 + 10 = 6$ " true?	When you're telling the time (8am + 10 hours = 6pm)
24	Here are three matches: How can you add two more matches, but get eight?	Put the extra two matches in a V shape to make 8 in Roman numerals:  (Another possibility is when the two matches are placed horizontally, making a digital 8 on its side) 

Question Number	Question	Answer
25	Leonhard's town has seven bridges as shown below. Can you find a route around the town that crosses every bridge exactly once?	No! This is a classic real life historical math problem solved by mathematician Leonhard Euler (rhymes with "boiler"). The city was Konigsberg in Prussia (now Kaliningrad, Russia). Not being able to find a solution is different to proving that there aren't any! Euler managed to do this in 1736, practically inventing graph theory in the process.

Do you have a group of students who need a boost in math?

Each student could receive personalized lessons every week from our specialist one-on-one math tutors.

- ✓ Differentiated instruction for each student
- ✓ Aligned to your state's standards
- ✓ Scaffolded learning to close gaps

“We just had our first session and it went great! The kids really liked it and felt like they were learning! One even said he finally felt like math was making sense.”



Michelle Craig, Instructional Coach,
Sherwood Forest Elementary, Washington

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