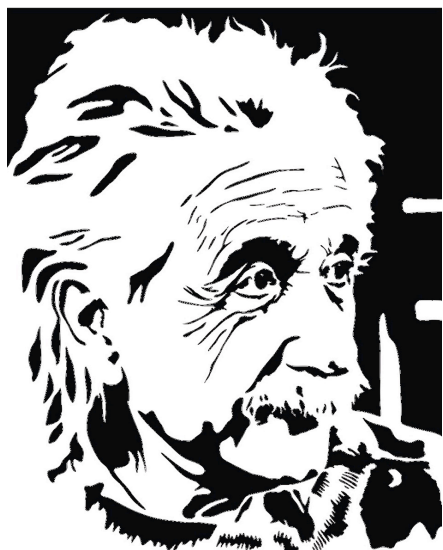
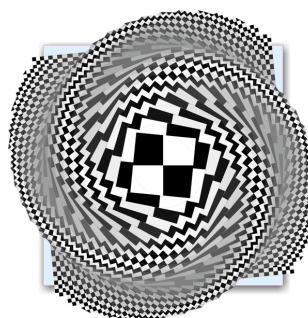


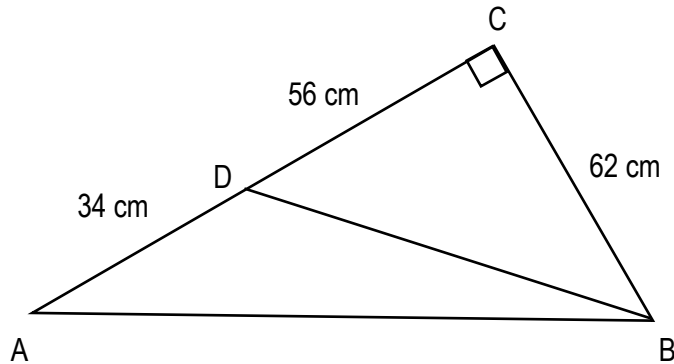
TPS MATH CHALLENGE 1

Enclosed are 16 Math Challenges. Your task is to complete each one and include the procedures, methods and necessary explanations you used to solve them. (SHOW YOUR WORK).

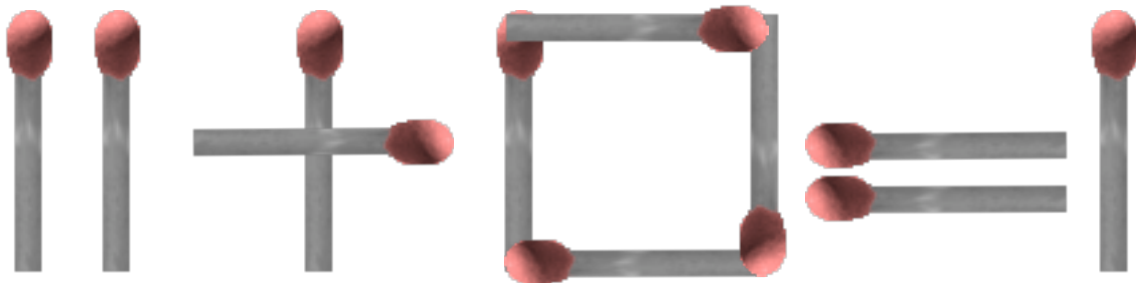
Each Challenge is worth 1 point, except for Challenge 16, which is worth 1 point for each 4 numbers completed. There is a bonus attached to question # 6. The Challenge is out of 20 total marks.



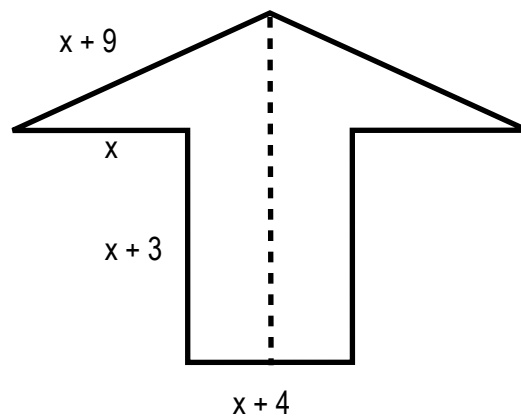
1. A zoo has several ostriches and several elephants. They have 126 eyes and 196 legs in total. How many ostriches and how many elephants are in the zoo?
2. Given a 5-litre jug, a 12-litre jug and an unlimited supply of water, how do you measure out exactly 1 litre of water?
3. The numbers 8, 24, x , 19, 5, y , and 16 have a mean of 17. What is the value of $x + y$?
4. Find the area of $\triangle ADB$.



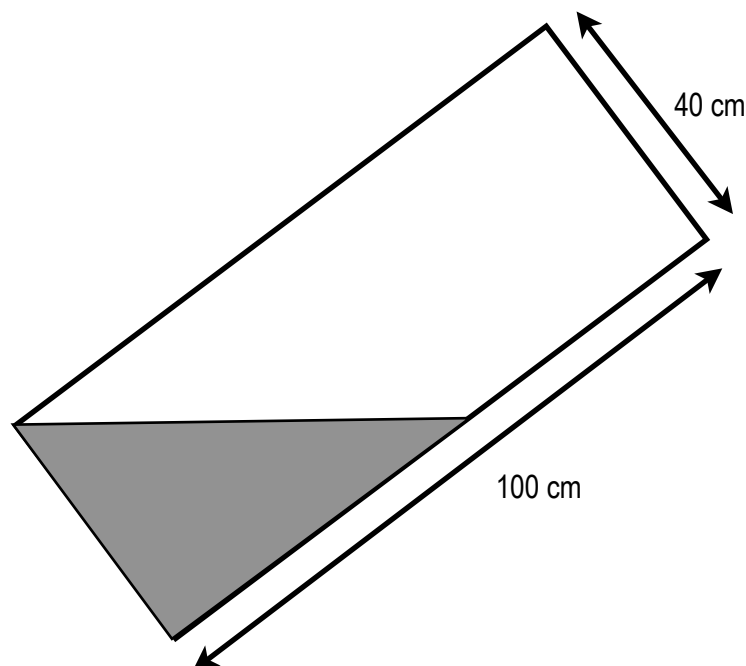
5. Alex, Sam, Michael and Dustin all decided to take up horseback riding. Michael went twice as many times as Sam, and Alex went four more times than Dustin but three less times than Michael. Dustin went fifteen times in total. How many times did Sam go?
6. Pictured below is a math equation made from match sticks. The expression states that eleven plus zero equals one. This of course is false, but Mr. T claims that by moving just one match stick to a new position the left side can be made to equal the right side. Mr. T further states that you must find two different ways of solving the problem. If you find a third way, you receive a 2 point bonus!



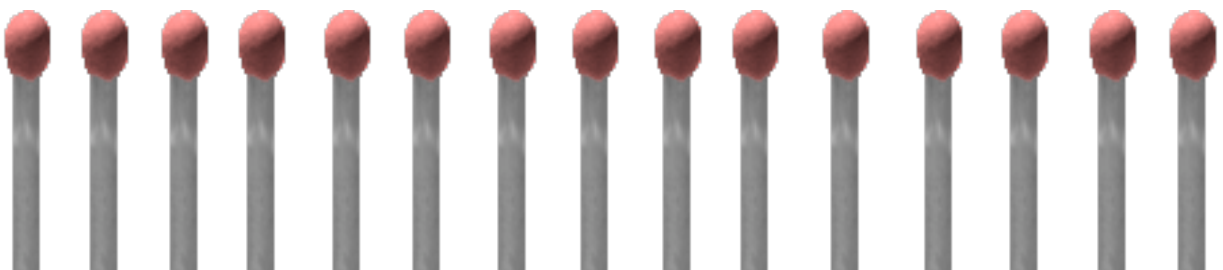
7. Given the symmetric shape below with a known perimeter of 77m, find the area of the shape.



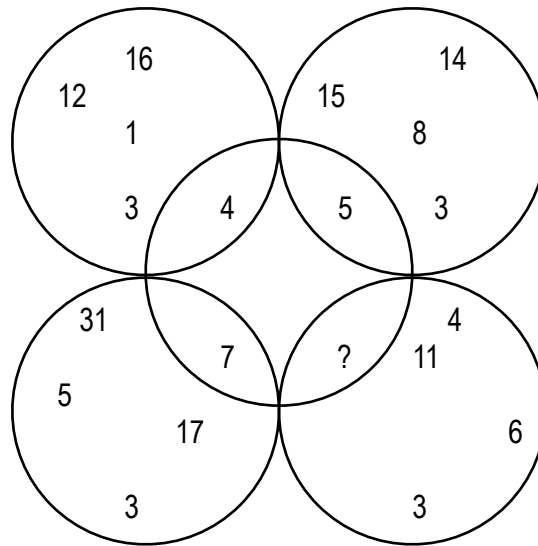
8. A fish tank measures 100 cm long, 60 cm wide and 40 cm high. When the fish tank is resting on a 60 cm edge, the water level reaches the midpoint of the base (length) as pictured below. What is the depth of the water when the fish tank is resting in a horizontal position?



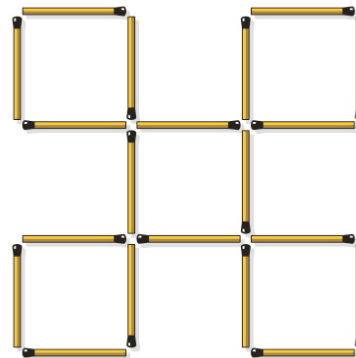
9. Arrange 15 matchsticks on a table so that they form 8 complete squares all the same size. No matchsticks can be overlapped or bent or broken and no squares may be formed inside another.



10. Four friends, Mr. T, Mr. O, Mr. P, and Mr. C pooled their money together. They had \$233 between them. If Mr. T had \$43 more than Mr. O, \$20 more than Mr. P and \$81 more than Mr. C, how much money did each person have?
11. If $x = 7$ and $y = 4x$ and $z = 2y$, then the value of $4y + 0.5z$ equals?
12. What number should replace the question mark?



13. When you roll a single ordinary dice, which of the following is the most likely to be true about your score?
- A** it is odd **B** it is a factor of 18 **C** it is prime **D** it is a factor of 12 **E** it is even
14. There are five squares formed with 20 matchsticks, as shown in the illustration. Move three matchsticks to get produce nine squares. Overlapping or breaking the matchsticks and leaving "lose ends" are not allowed. (Hint: The squares do not have to all be the same size)



15. The sum of four numbers is 64. If you add 3 to the first number, subtract 3 from the second number, divide the third by 3 and multiply the fourth number by 3, all the numbers will be the equal. What are the four numbers?

16. Using four 3s and any mathematical symbols to produce the numbers 1 through 20. You must always use four 3s, no more, no less and no other numbers. You may use any mathematical symbols including +, ÷, -, √, !, powers, etc. (! is the symbol for factorial which mean that 3! = 3 x 2 x 1 = 6)

As an aid, numbers 2, 8 and 4 are completed below:

$$\frac{3}{3} + \frac{3}{3} = 2$$

$$\frac{3!}{3} + 3 + 3 = 8$$

$$33 \div 3 + 3 = 14$$

#	Equation	#	Equation
1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	