MOSCROP MATH 8 ENRICHED ENTRANCE EXAM

APRIL 11, 2019

NAME:_____

ELEMENTARY SCHOOL:_____

Teacher: _____

Time: 1 hour 45 minutes

Part A is a NON-CALCULATOR section. Students are to complete part A without a calculator and then submit it to the teacher before moving on to Part B. Students have up to 45 minutes to complete Part A and a total of 1 hour and 45minutes for the entire exam.

In Part B and C, calculators are allowed. Students will need to show all their work and justification to earn full marks. All answers must be exact or accurately rounded to 3 decimal places unless specified otherwise.

The exam consists of 10 questions in Part A, 5 questions in Part B, and 2 questions in Part C. Each question in Part A is worth 3 marks, Part B is 4 marks, and Part C is 5 marks. You can earn full marks of each question in Part A by entering the correct answer in the indicated space. If your answer is incorrect, work must be shown to be given any partial marks.

Section	Questions	Values	Total	Score
Part A	10	2	20	
Part B	5	3	15	
Part C	2	5	10	
Total			45 marks	

Name:_____ **Elementary School:**_____

Part A:

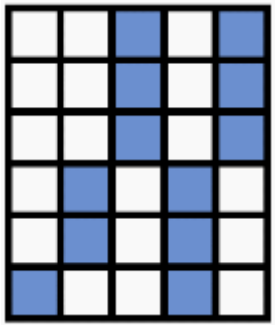
1. Evaluate: $2\times(-3)\times 5\times(-7)\times 9\times(11)=??$

Answer:_____

2. Evaluate: $1-2+3-4+5-6+.....+21-22+23-24+25-26+27=??$

Answer:_____

3. What percentage of the diagram is shaded?



Answer:_____

4. Sherry has a farm with cows, horses, dogs and rabbits. The weight of two cows is equal to 4 horses. The weight of 2 horses is equal to 5 dogs. The weight of 1 dog is equal to 15 rabbits. How many rabbits is equal to the weight of one cow?

   2 cows = 4 horses

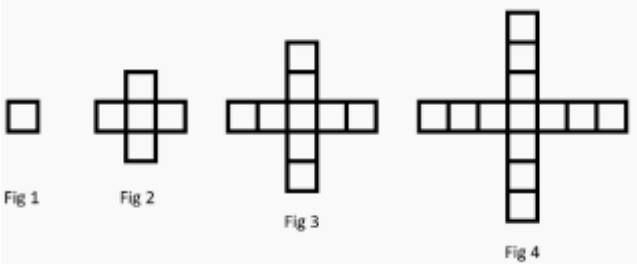
   2 horses = 5 dogs

   1 dog = 15 rabbits

   1 cow = ?? rabbits

Answer:_____

5. Given the sequence of images, how many squares will there in the 8^{th} figure?

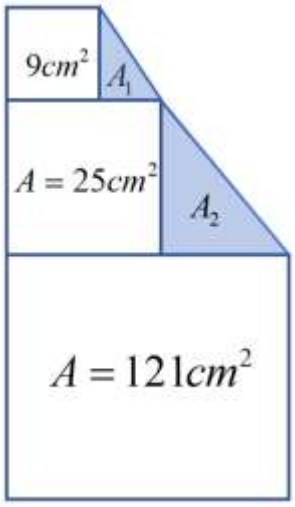


Answer:_____

6. Alan has a special calculator where if he presses the button “A” he gets the number 112. If he presses the buttom “B”, he gets the number 123. If he presses the button “C”, he gets the number 312. For instance if he presses “AB” he generates the number 112123. Also if he presses “BCA” he gets the number 123312112. What number will he get if he pressed “CBB” minus “ABC”?

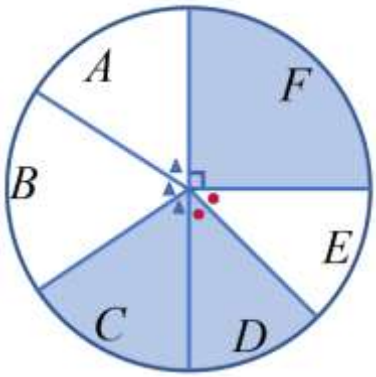
Answer:_____

7. Given the areas of the three squares, what is the sum of the areas of the two triangles?



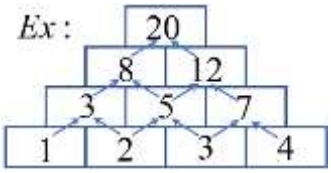
Answer:_____

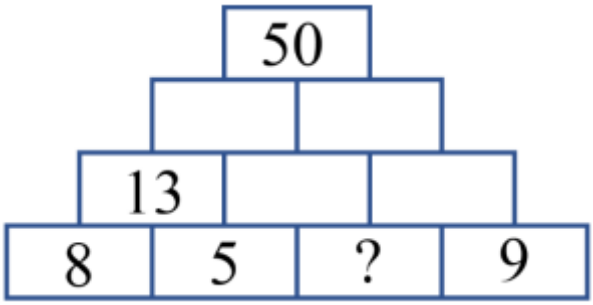
8. Twenty four (24) students took a survey to see what drink they like best with options "A,B,C,D,E, and F". The fraction of people that voted for each drink are given in the circle graph shown below. If "A,B, and C" have the same number votes, and "D and E" also the have the same number of votes with each other, then how many people voted for "C, D, and F" altogether?



Answer:_____

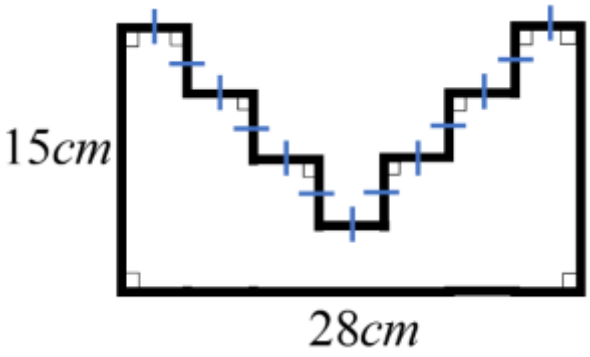
9. In the following diagram, the value of each block is equal to the sum of the two blocks underneath it. An example is given on the left. If the sum of the blocks leads to a 50 at the top of the pyramid at the right, then what is the value of the missing number in the block shown?





Answer:_____

10. What is the area of the following shape? The little lines mean the sides are equal in length.

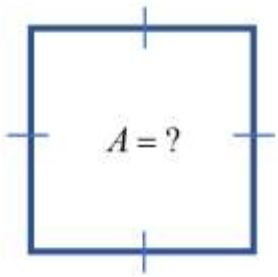


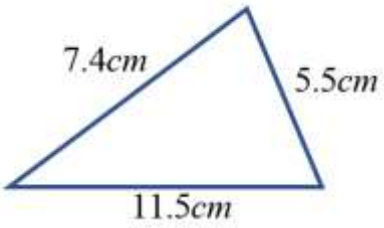
Answer:_____

Name:_____ **Elementary School:**_____

PART B:

1. A square and a triangle have equal perimeters. The length of the three sides of a triangle are 5.5cm, 7.4cm, and 11.5cm. What is the area of the square?





Answer:_____

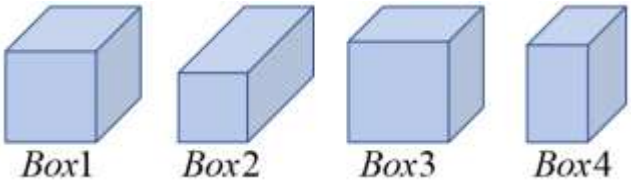
2. Sarah works as a doctor in a hospital. She works four days in a row and then gets one day off. She then repeats the cycle working the next four days in a row and then gets one day off. If she started working on Monday, her first day off will be Friday, her second day off will be Wednesday, and so on. What day of the week will her 30th day off be?

Answer:_____

3. Jerry wrote four tests and got the following scores: 84%, 64%, 82% and 73%. He still has two more tests to write. On the first test he scored very well and on the second one he only got half the score of the first one. If Jerry ends up with an average of 73%, what score did he get on the two tests?

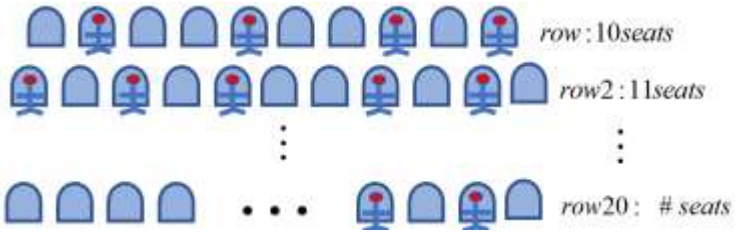
Answer:_____

4. Jenny needs to know the combined weight in kilograms of 4 boxes that she wants to mail. Unfortunately, the only available scale is not accurate for weights less than 100 kilograms or more than 150 kilograms. So the boxes are weighted in groups of 3 in every possible way. The results are 138kg, 120kg, 123kg, 132 kg. What is the combined weight in pounds of the four boxes?



Answer:_____

5. An auditorium with 20 rows of seats has 10 seats in the first row. Each successive row has one more seat than the previous row. If students taking an exam are permitted to sit in any row, but not next to another student in that row, then what is the maximum number of students that can be seated?



Answer:_____

Name:_____ **Elementary School:**_____

PART C:

1. Bicycle licence plates in Moscrop Land contains 3 letters. The first letter must be chosen from set #1 {A, B, C, D, or E}. The second letter must be chosen from set #2 {J, K, and L}. The third letter chosen from set #3{P, Q, R, and S}.
   When Moscrop needed more license plates, two new letters are added that are not in any of the original sets. The two new letters may both be added to one of the sets OR one letter may be added to one set and one to another set. For example, if the two new letters are "Y" and "Z", they can be both added to set #2, then the second letter can be either (J, K, L, Y, or Z). Otherwise, you can "Y" added to one set and "Z" added to a different set:
   a) How many license plates were originally available before the letters were added?

   Answer:_____

   b) How many license plates are now possible with the two new letters?

   Answer:_____

2. Tony and Maria are training for a race by running all the way up and down a 700m long ski slope. They each run up the slope at different constant speeds. Coming down the slope, each runs at double his or her uphill speed. Maria reaches the top first, and immediately starts running back down, meeting Tony 70m from the top.

   a) What is the ratio of Maria's speed compared to Tony's speed?

Answer:_____

   b) When Maria reaches the bottom, how far behind is Tony? Show all your work and steps to earn full marks. Explain all your steps. (Use the other side of this page if you need extra space)

Answer:_____