

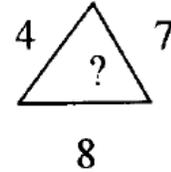
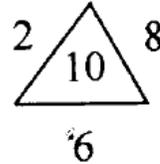
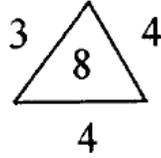
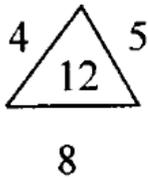
2010 Primary Math World Contest Tryouts Problems

20 problems done in 45 mins. No calculator is allowed. Only correct answer counts. Max pts is 50.
 [Problem 1-5: 1pt each] [Problem 6-10: 2 pts each] [Problem 11-15: 3 pts each] [Problem 16-20: 4 pts each] Please put answers in the answer sheet provided.

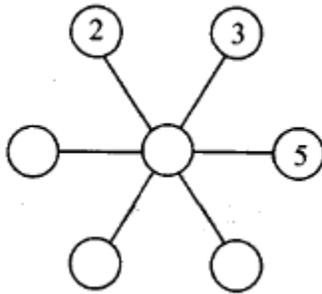
[Problem 1-5: 1point each]

1) 2010 dimes + 2010 nickels + ? pennies = 2010 quarters

2) Following the pattern, what value would “?” be?



3) Fill in different digit in the empty bubble \bigcirc such that the sum of each line consists of 3 bubbles \bigcirc is 10. There are 3 lines.



4) Find the value of \triangle , \bigcirc , and \star ;

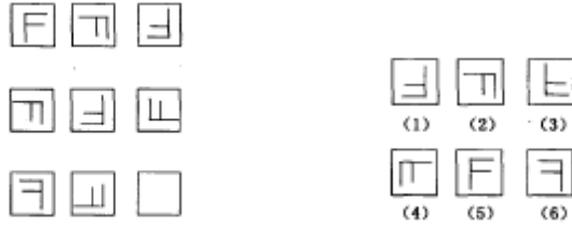
$$\text{given } \begin{cases} \triangle + \bigcirc + \star = 15 \\ \triangle + \bigcirc + \star + \triangle = 19 \\ \star + \bigcirc + \bigcirc + \triangle = 20 \end{cases}$$

5) How many primes less than 2010 are divisible by 7?

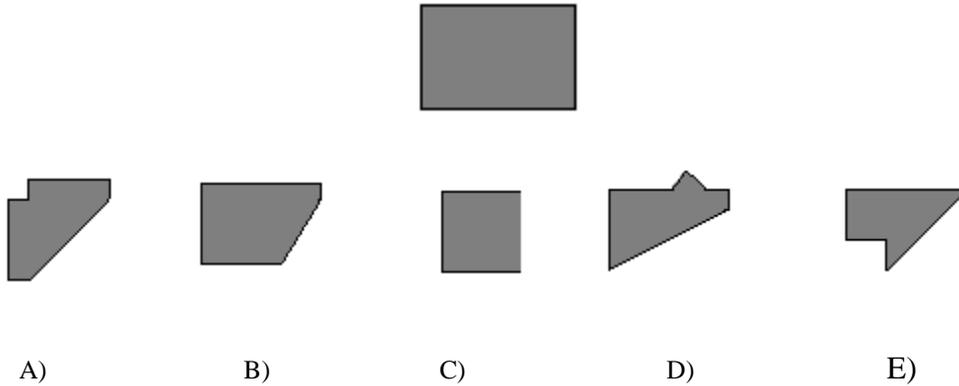
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[Problem 6-10: 2 pts each]

6) The diagram below shows 3 rows containing 3 figures in each row. The three rows of figures follow the same pattern. Which figure (1), (2), (3), ..., or (6) should be the figure for the blank spot?



7) Which of the figures below (A-E) CANNOT be made with folding a rectangular sheet just once?



8) Which of the following (A-E) CANNOT be expressed as the sum of three consecutive integers?

- A) 774 B) 289554 C) 87549 D) 87433 E) 21483

9) What would be the unit or ones digit of the result of “2001 x 2003 x 2005 x 2007 x 2009 – 2002 x 2004 x 2006 x 2008 x 2010” ?

10) Find the missing digit shown as ? in the result of “3145 × 92653 = 29139?685”.

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[Problem 11-15: 3 pts each]

11) $2^{2010} - 2^{2009} - 2^{2008} - 2^{2007} - \dots - 2 - 1 = ?$

12) List all the 2-digit numbers that end in the same 2-digit number when squared.

13) Find the smallest natural number other than 1 such that it'll become 2's multiple when adding 1 to it; it'll become 3's multiple when adding 2 to it; it'll become 4's multiple when adding 3 to it; it'll become 5's multiple when adding 4 to it; it'll become 6's multiple when adding 5 to it; it'll become 7's multiple when adding 6 to it.

14) Susan wrote a 4-digit number on a piece of paper and asked her good friend Alice to guess it. Susan told Alice that all four digits were different.

Alice: Is it 4607?

Susan: Two of the numbers are correct but they are positioned wrongly.

Alice: Could it be 1385?

Susan: My answer is the same as before.

Alice: How about 2879?

Susan: Wow, two of the digits are correct and in the right places as well.

Alice: Is it 5461?

Susan: None of the digits is correct.

What was Susan's number?

15) The figure shows a multiplication, but some digits are left out. What is the difference of the largest possible five-digit number product and the smallest possible five-digit number product?

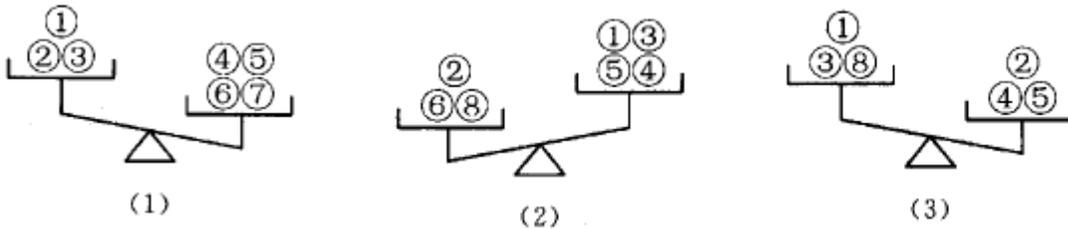
$$\begin{array}{r}
 2 \\
 \\
 \times \\
 \hline
 0 8
 \end{array}$$

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[Problem 16-20: 4 pts each]

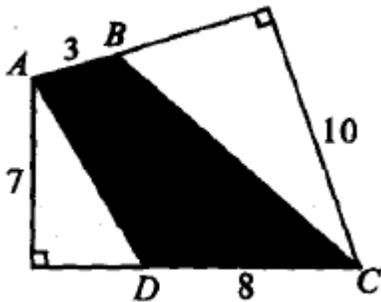
16) When $(10^{20} - 5)^2$ is calculated, what would be the sum of its digits?

17) There are six 1g balls, one 2g ball, and one 3g balls totaling 8 balls. We label the 8 balls with number 1 to 8 and put them on the scale 3 separate times arranged as shown in the following 3 diagrams. Which number ball is the 2g ball and which number ball is the 3g ball?



18) Four cubes of volumes 1cm^3 , 8cm^3 , 27cm^3 , and 125cm^3 are glued together at their faces. What is the number of square centimeters in the smallest possible surface area of the resulting solid figure?

19) The following quadrilateral has 2 right angles. Given $AB = 3$ cm; $DC = 8$ cm; and the other 2 sides are 7 cm and 10 cm, what would be the area of the shaded quadrilateral ABCD?



20) Natural numbers are being arranged following the pattern below. A) What would be the number in the 11th row (counting from top to bottom) and 14th column (counting from left to right)? B) What row and column would number 127 be in?

Column ----->						
Row						
	1	2	5	10	17	26
	4	3	6	11	18	27
	9	8	7	12	19	28
	16	15	14	13	20	29
	25	24	23	22	21	30
	36	35	34	33	32	31