Year 7 Mathematics 2011

Problem Solving Test

Total marks: 35

Name_____

Show your working for any question worth more than one mark.

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1. Work out the following two numbers:

   Which two numbers add to 6 and multiply to 8?   _____   _____   [1]

   Which two numbers subtract to give 5 and multiply to give 24?   _____   _____   [1]

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2. Selena cuts a log into three pieces in 6 minutes. She then cut a similar log into five pieces. How long should the job have taken if she worked at the same rate she worked when cutting the first log?

   [2]

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3. Eight relatives always give gifts to one another at Christmas. How many gifts are given out altogether?

   [2]

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4. For an English assignment, you are to choose **three** of the following books to read: *To Kill a Mockingbird (A), All Quiet on the Western Front (B), The Stranger (C), The Adventures of Huckleberry Finn (D),* and *A Midsummer Night's Dream (E)*. How many different sets of three books can you choose? (Use the abbreviations A,B,C,D and E to help you).

   [3]

5. A rectangle has an area measuring 120 square centimeters. Its length and width are whole numbers of centimeters. Fill in the table to help find all the possible combinations of length and width.

Length (cm)	Width (cm)	Length (cm)	Width (cm)
1	120	120	1
2			2
3			
	30		
5			
	15		

[4]

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6. Farmer Ben has only ducks and cows. He can't remember how many of each he has, but he doesn't need to remember because he knows he has 22 animals and that 22 is his age. He also knows that the animals have a total of 56 legs, because 56 is also his father's age. Assuming that each animal has all legs intact and no more, how many of each animal does Farmer Ben have?

[2]

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7. On Sunday my tailor received 16 meters of cloth. On the next day, Monday, he cut off 2 meters. On the following days, he cut off 2 meters of material every day, except on the following Sunday, when he rested. On which working day did the tailor make his last cut?

[2]

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8. Tom is looking at his encyclopedia of mathematical games. It has 256 pages, numbered from 1 to 256. The left pages have even numbers, the right pages have odd numbers.

Tom opens his encyclopedia at random. He adds up the **six digits** of the two page numbers in front of him. This sum is the greatest it can be. What is the number on the left page?
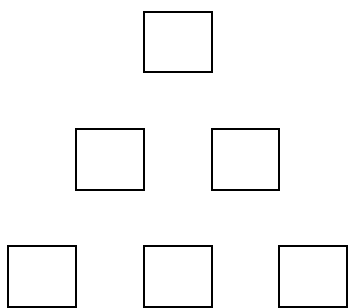
[2]

9. Bad Bargle sneaked into Homer's pigeon loft one day. He took half of the pigeons. He decided that wasn't bad enough, so he took one more and left. Later, Homer opened the door of the loft to exercise his pigeons. Half of the remaining flock flew out, leaving six inside the pen. How many pigeons did Homer have to begin with?
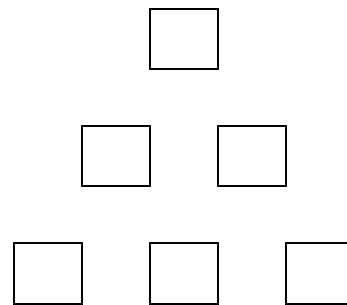
[3]

10. To do this magic triangle, you must use the digits 1 through 6, once each. Place one digit in each square to give each side of this triangle a sum of 12

Use this triangle for working   Use this triangle for your final answer

[2]

11. Two students, Glenda and Sonia, played the game described below. Sonia started with a number, did the arithmetic, and told Glenda that she had ended up with 12. What number did Sonia start with?

Number Trick

Start with a number between 1 and 10

Multiply the number by 4

Add 6 to the number you have now

Divide by 2

Subtract 5

Tell me the number you end with, and I'll tell you the number you started with.

[4]

12. Elaine, Lisa, Brittney, and Consuelo each have hobbies: model railroading, building model airplanes, rocketry and raising tropical fish. Use the grid to solve the problem.

1. Lisa has never met the person who does rocketry.

2. Elaine is a pilot, and ironically, has a hobby that has nothing to do with anything that flys.

3. The rocketry hobbyist, the railroader, and Brittney are friends.

4. Lisa's hobby involves things with wheels.

	Rocketry	Rail	Planes	Fish
Elaine				
Lisa				
Brittney				
Consuelo				

[4]

13. Christopher has four more than twice as many rocks in his wagon as Gordon. If he gives Gordon six rocks, he will have one more than Gordon. How many does each boy have in his wagon to start with?

[3]