SEVENOAKS SCHOOL

YEAR 9 (13+) ENTRANCE EXAMINATION

October 2011
for entry in September 2012

MATHEMATICS

Your Name: …….

Your School: …….

Time allowed: 1 hour

Equipment needed: Pen, pencil, eraser, calculator and ruler

Information for candidates:

1. Write your name and school on this page.
2. Write your answers on the question paper in the space provided.
3. There are 12 questions in this paper, try to answer all of them, but don't worry if you don't complete the paper. If you get stuck, just go on to the next question and if you have time at the end come back to the one(s) you left.
4. There are 60 marks in total available for this paper. Marks for each question are shown in square brackets [ ] after the question.
5. Show all your working. You may be awarded marks for correct working even if your final answer is correct, and a correct answer unsupported by correct working may not receive full marks.
6. Give your answers to three significant figures where appropriate.

1. Without using your calculator, showing your working clearly, evaluate the following:

   a) $(-12) + (-15) - (-5)$

   Answer: ..... [1]

   b) $1.21 \div 1.1$

   Answer: ..... [1]

   c) $17.5\% \; of \; \$640$

   Answer: ..... [2]

   d) 35×1027

   Answer: ..... [2]

   e) $\frac{3}{4} \times \frac{8}{9}$

   Answer: ..... [2]

   f) Half of a quarter of a third.

   Answer: ..... [2]

2. Find the exact value of: $\dfrac{8.3 + 9.7}{6.4 - 1.4}$

   Answer: ..... [2]

3. Solve:

a) $12x + 9 = 45$

Answer: …… [1]

b) $2y + 15 = y + 10$

Answer: …… [2]

c) $\frac{3z}{4} + 5 = 10.25$

Answer: …… [3]

d) $5(x - 3) - 4(x - 2) = 15$

Answer: …… [3]

4. Write down the next two terms of these sequences:

a) 15, 18, 21, …, …

Answer: …… [1]

b) 17, 34, 68, …, …

Answer: …… [1]

c) 100, 90, 81, …, …

Answer: …… [1]

5. At Halloween Toby, Sam and Ben receive sweets in the ratio 6 : 4 : 3 respectively. If Ben received 39 sweets:

   a) How many sweets did Sam receive?

   Answer: …… [1]

   b) What fraction of the sweets did Toby receive?

   Answer: …… [2]

   c) How many sweets were received in total?

   Answer: …… [2]

6. If $a = 4.5\times10^4$ and $b = 3.6\times10^5$ find, without using your calculator and showing your working.

   a) $2a + b$

   Answer: …… [2]

   b) $10a - b$

   Answer: …… [2]

7. In a sale, normal prices were reduced by 35%

a) The normal price of a TV was £600
Work out the sale price of the TV.

Answer: ..... [2]

b) The normal price of a clock was reduced by £70.
Work out the normal price of the clock.

Answer: ..... [2]

c) The sale price of a computer was £884
Work out the normal price of the computer.

Answer: ..... [2]

8. Simplify

a) $p^5 \times p^2$

Answer: ..... [1]

b) $\frac{q^8}{q^3}$

Answer: ..... [2]

c) Expand and simplify $3(5x - 1) - 4(3x - 3)$

Answer: ..... [3]

d) Expand and simplify $(z + 3)(z + 5)$

Answer: ..... [3]

9. The table shows information about the number of emails Eliot receives each day:

Number of emails received	Probability
0	0.2
1 to 5	0.5
6 to 10	0.2
More than 10	0.1

a) There are 30 days in June.
Calculate an estimate of the number of days in June on which Eliot received three emails.

Answer: …… [2]

b) Find the probability that on a particular day the number of letters delivered is 6 or more.

Answer: …… [1]

10. Calculate the size of one exterior angle and one interior angle of a regular ten-sided shape (decagon)

Answer: …… [3]

11. Eliot buys x 'Sour Sweets' which cost 12 p each.
He pays for them with three £1 coins.
Maya buys the same number of 'Chocolate Drops' which cost 17p each.
She pays for them with four £1 coins.
They each receive the same amount of change.

a) Write down an expression, in terms of x, for the amount of change Eliot gets.

Answer: …… [1]

b) Write down an expression, in terms of x, for the amount of change Maya gets.

Answer: …… [1]

c) Hence, or otherwise, work out how many bars each person bought?

Answer: …… [2]

12. Anjali chooses two numbers from the box below:

987.37
987.43
987.47
987.53
987.57
987.63
987.67

Ben says:

'When you round Anjali's two numbers to 1 decimal place, they are equal.'

Seeta says:

'When you round Anjali's two numbers to 3 significant figures, they are **NOT** equal.'

Both statements are correct.

Write down Anjali's two numbers.

Answer: …… [2]

END OF PAPER