Year 7 Entrance Exams

Maths

Specimen Paper 1

Instructions to candidates

Time allowed: 45 minutes

Instructions to candidates:

1. Show all working - you may receive marks for correct working even if your final answer is wrong. Leave all fractions in their lowest form.

2. Answer as many questions as you can, in any order.

3. Do not spend too long on any one question - if you get stuck, move on to the next.

4. Answers and working should be written on the exam paper in the spaces provided.

5. Calculating aids are NOT permitted.
1. Write the missing number in the space provided.

\[ 56 \div \square = 8 \]

2. Here is a number sequence. Write in the missing number.

\[ 3 \quad 6 \quad 10 \quad 15 \quad \square \]

3. The diagram below shows a triangle [not drawn to scale]. Calculate each of the angles marked x and y.

\[ \text{Answer: } x = \ldots; \quad y = \ldots \]

4. Change 0.72 to a fraction leaving your answer in its simplest form

Answer: ________________

5. Calculate each of the following

(a) \[ 3 - \frac{2}{9} \]

Answer: ________________

(b) \[ 2 + 4 \times \frac{3}{5} \]

Answer: ________________
6. My garden centre sells Summer bedding plants at 85p each. I have £30 to spend. How many plants can I buy? Show your working.

Answer: _____________

7. Write in what the two missing digits could be:

\[
\begin{array}{ccc}
3 & 4 & + \\
\hline
\end{array} \\
\begin{array}{cccc}
9 & 7 & = & 631 \\
\hline
\end{array}
\]
8. Brian has 7 dominoes in a bag. He takes out one domino and finds the total of the two numbers. He then puts the domino back in the bag. His 7 dominoes are shown below, together with a graph of his results after doing this experiment 100 times.

(a) Explain why the total 7 never came up.
Answer: _______________________________________________________________________
____________________________________________________________________________

(b) Explain why the total of 6 came up most often.
Answer: _______________________________________________________________________
____________________________________________________________________________
9. Write in the missing numbers to each of the following:

(a) \[93 - \_ - 18 = 36\]

(b) \[8 + \_ \times 7 = 91\]

10. Which of the following fractions is closest to \(\frac{1}{4}\):

\[
\frac{11}{40}, \frac{16}{60}, \frac{21}{80}, \frac{26}{100}, \frac{31}{120}
\]

Answer: ________________

11. Susan is making a necklace of beads, using red and yellow beads in the ratio 2 : 3. She has 56 red beads altogether.

How many yellow beads will she need:

Answer: ___________ yellow beads

How many beads will she use altogether?

Answer: ___________ beads

12. The three numbers missing from these boxes are all prime numbers. Write in the missing numbers.

\[
\_ \times \_ \times \_ = 385
\]
13. Brian is looking at the schedule of TV programmes for that evening.

<table>
<thead>
<tr>
<th>BBC 1</th>
<th>ITV</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.45 ‘Neighbours’</td>
<td>5.40 News</td>
</tr>
<tr>
<td>6.00 News</td>
<td>6.00 Cartoons</td>
</tr>
<tr>
<td>6.30 Top of the Pops</td>
<td>6.20 Film</td>
</tr>
<tr>
<td>7.10 Sport</td>
<td>8.05 Comedy Programme</td>
</tr>
<tr>
<td>9.25 Drama</td>
<td>9.00 Documentary</td>
</tr>
</tbody>
</table>

Brian watches the film on ITV but after 1/2 an hour he changes channel to BBC 1. What is showing on BBC 1 when he changes channel?

Answer: _______________________

The Drama on BBC 1 lasts for 1 hour and 40 minutes. At what time does it end?

Answer: _______________________

14. Make a list of all the whole numbers which leave a remainder of 7 when divided into 46.

Answer: _______________________

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15. The charge £C made by a caterer for arranging a birthday party for n people is given by the formula:
\[ C = 3n + 40 \]

(a) What is the charge, in £, for a party of 20 people?

Answer: £\underline{\hspace{1cm}}

(b) What is the average cost per person for a party of 20 people?

Answer: £\underline{\hspace{1cm}}

16. Study the graph below:

[Graph showing coordinates A, B, C, with A(3, 1), B(6, 2), C(12, 4).]

The co-ordinates of A, B and C are: A (3, 1) ; B (6, 2) ; C (12, 4)

The value of D (not shown) also lies on this line. If D is (15, a), what is the value of a?

Answer: a = \underline{\hspace{1cm}}

E is another point (not shown) on this line and E is (b, 8).

What is the value of b?

Answer: b = \underline{\hspace{1cm}}

If (p, q) is another point on this same line, write down a relationship (equation) between p and q.

Answer: \underline{\hspace{5cm}}
17. Find the value of each of the following:

(a) \(68.9 + 9.86\)

Answer: (a) ________________

(b) \(321 - 268\)

Answer: (b) ________________

(c) \(391 \times 7\)

Answer: (c) ________________

(d) \(656 \div 8\)

Answer: (d) ________________

18. Brian starts with 1000 and subtracts 11 each time. The first four numbers in his sequence are:

1000, 989, 978, 967

If he continues in this way, what will be the first negative number in his sequence?

Answer: ________________
19. Find the missing numbers so that the answer is always 56

\[ \begin{align*}
131 - & \quad \text{-----------------} \\
\frac{1}{3} \text{ of} & \quad \text{-----------------} \\
560 ÷ & \quad \text{-----------------} \\
\frac{2}{3} \text{ of} & \quad \text{-----------------}
\end{align*} \]

\[ = 56 \]

20. Two rectangles ABCD and PQRS are shown below:

\[ \begin{align*}
AD &= 3\text{cm} \\
AB &= 5\text{cm} \\
PQ &= 2\text{cm} \\
PS &= 2\text{cm} \\
BR &= 1\text{cm}
\end{align*} \]

Calculate the shaded area.

Answer: \[ \quad \text{cm}^2 \]

NOW CHECK THROUGH YOUR WORK CAREFULLY!