

EXETER SCHOOL
13+ Entrance Examination 2013
MATHEMATICS
1 Hour 15 Minutes

INSTRUCTIONS TO CANDIDATES

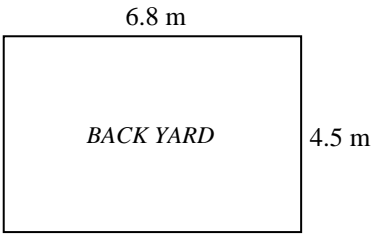
- Read the questions carefully.
- The marks available for each question are indicated at the right hand edge of the page.
- Use the space in the middle column of this paper for working out your answers.
- Write your final answers clearly in the right-hand column of this paper.
- If you have to alter an answer, cross it out and write the new answer clearly alongside.
- Check that you have answered every part of every question.
- Calculators must NOT be used.

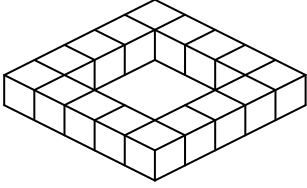
Questions	Working	Answers
1. Work out: (a) $314 + 152 + 261$ (b) $582 - 215$ (c) 273×3 (d) $552 \div 8$ (e) 23×58		1. (a) (b) (c) (d) (e)
		[10]
2. (a) What is $\frac{3}{7}$ of 56 metres? (b) What is 45% of 60 kg? (c) Work out 0.7×9		2. (a)metres (b) kg (c)
		[6]

Questions	Working	Answers
<p>3. Work out, giving your answers as fractions in their simplest form:</p> <p>(a) $\frac{3}{10} + \frac{7}{15}$</p> <p>(b) $\frac{4}{9} \times \frac{3}{8}$</p> <p>(c) $\frac{3}{7} \div \frac{6}{11}$</p>		<p>3.</p> <p>(a)</p> <p>(b)</p> <p>(c)</p> <p>[6]</p>
<p>4. (a) Claire buys 6 packs of sausages. Each pack costs £2.41 and she pays with a £20 note. How much change should she get?</p> <p>Each pack is the same weight. Twenty-two packs of sausages weigh almost exactly 10 kg.</p> <p>(b) Roughly how many packs of sausages would weigh 25 kg?</p>		<p>4.</p> <p>(a) £</p> <p>(b) packs</p> <p>[4]</p>
<p>5. Insert brackets <u>on the right</u> to make the statements below correct:</p> <p>(a) $2 \times 5 + 3 - 1 \times 4 = 12$</p> <p>(b) $2 \times 5 + 3 - 1 \times 4 = 18$</p> <p>(c) $2 \times 5 + 3 - 1 \times 4 = 56$</p>		<p>5.</p> <p>Insert brackets here:</p> <p>(a) $2 \times 5 + 3 - 1 \times 4 = 12$</p> <p>(b) $2 \times 5 + 3 - 1 \times 4 = 18$</p> <p>(c) $2 \times 5 + 3 - 1 \times 4 = 56$</p> <p>[6]</p>
<p>6. (a) Dave walked 35 miles on the moor. He started at 9:45am and finished at 5:29pm. How long did the walk take overall?</p> <p>(b) Ed ran a marathon in 138 minutes. He started running at 10:10am. At what time did he finish the marathon?</p>		<p>6.</p> <p>(a) hrsmins</p> <p>(b)</p> <p>[4]</p>

Questions	Working	Answers
<p>7. Ten clementines weigh the same as twelve plums.</p> <p>Three plums weigh the same as thirty grapes.</p> <p>Six apples weigh the same as seven clementines.</p> <p>If a grape weighs five grams, find the weight of the other items.</p>		<p>7.</p> <p>Apples g</p> <p>Plums g</p> <p>Clementines g</p> <p>[6]</p>
<p>8. Fred cycles 6 miles to work each day at an average speed of 12 mph.</p> <p>(a) If he gets to work at 0835, what time did he leave home?</p> <p>Fred has to walk home because his bike is broken. He leaves at 1645 and gets home at 1815.</p> <p>(b) What was Fred's average speed on the journey home?</p>		<p>8.</p> <p>(a)</p> <p>(b) mph</p> <p>[4]</p>
<p>9. Graham's bedroom is rectangular and the width is 2m less than the length. The perimeter of the bedroom is 16m.</p> <div data-bbox="248 1402 477 1547" style="border: 1px solid black; width: 143px; height: 65px; margin: 10px auto;"></div> <p>(a) How long is the longer wall of the bedroom?</p> <p>(b) What is the total floor area?</p>		<p>9.</p> <p>(a) m</p> <p>(b) m²</p> <p>[4]</p>
<p>10. Work out:</p> <p>(a) 2.41×3.7</p> <p>(b) $2.16 \div 0.9$</p>		<p>10.</p> <p>(a)</p> <p>(b)</p> <p>[4]</p>

Questions	Working	Answers						
<p>11. The numbers 1 to 6 each need to be placed <u>once</u> in the six squares in the answer grid on the right. These clues tell you where to place them:</p> <p>The top row has no odd numbers.</p> <p>The bottom row adds up to 4.</p> <p>The right column adds up to 14.</p> <p>The middle row adds up to 9.</p>		<p>11.</p> <table border="1" data-bbox="1070 239 1410 687"> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table> <p>[6]</p>						
<p>12. (a) Write these fractions in their simplest form:</p> <p>(i) $\frac{32}{40}$ (ii) $\frac{25}{45}$</p> <p>(b) Pick the pair of fractions in this list which are equal to each other:</p> <p>$\frac{9}{12}$ $\frac{7}{10}$ $\frac{12}{9}$ $\frac{6}{8}$</p>		<p>12.</p> <p>(a) (i)</p> <p>(ii)</p> <p>(b) and</p> <p>[6]</p>						
<p>13. Write these numbers in order, smallest first:</p> <p>$\frac{1}{3}$, 0.23 , 0.3 , $\frac{1}{5}$, 32%</p>		<p>13.</p> <p>.....</p> <p>[4]</p>						
<p>14. Harold and Ian have a cake to eat. Harold eats one third of the cake and Ian eats two fifths of the cake.</p> <p>(a) What fraction of the whole cake do they eat altogether?</p> <p>They now decide to split the rest of the cake equally.</p> <p>(b) What fraction of the original cake do they each now get?</p>		<p>14.</p> <p>(a)</p> <p>(b)</p> <p>[4]</p>						

Questions	Working	Answers
<p>15. If $a = 4$, $b = -3$, and $c = 2$, work out the value of:</p> <p>(a) $ca + b$</p> <p>(b) bc^2</p> <p>(c) $c - 2ab$</p>		<p>15.</p> <p>(a)</p> <p>(b)</p> <p>(c)</p> <p>[6]</p>
<p>16. Jenny takes the train to school on four days a week for ten weeks. She can buy <u>books of ten tickets</u> for £19, or she can buy <u>weekly tickets</u> for £7.50 which she can use as often as she wants in that week.</p> <p>(a) Which is the cheaper option for Jenny – <u>book of ten tickets</u> or <u>weekly ticket</u>?</p> <p>(b) Over the ten weeks, how much would Jenny save with the cheaper option?</p>		<p>16.</p> <p>(a)</p> <p>(b) £</p> <p>[4]</p>
<p>17. Ken is putting patio tiles in his back yard. He wants to fit as many tiles in the back yard as possible.</p> <div style="text-align: center;">  </div> <p>Each tile measures 60cm by 60cm.</p> <p>(a) How many tiles can he fit in?</p> <p>(b) If the tiles cost £5.50 each, how much will it cost Ken to buy all the tiles he needs?</p>		<p>17.</p> <p>(a)tiles</p> <p>(b) £</p> <p>[4]</p>

Questions	Working	Answers
<p>18. Laura is arranging some boxes into a square shape with five boxes along each edge.</p>  <p>The square has the same number of boxes along each edge. There are no boxes in the middle of the square.</p> <p>(a) How many boxes are there?</p> <p>Laura then made a new square with seven boxes along each edge.</p> <p>(b) How many boxes are used?</p> <p>Laura then made a final square shape using exactly 40 boxes.</p> <p>(c) How many boxes are there along each edge of this square?</p>		<p>18.</p> <p>(a) boxes</p> <p>(b) boxes</p> <p>(c) boxes</p> <p>[6]</p>
<p>19. Solve the following equations:</p> <p>(a) $3x - 2 = 43$</p> <p>(b) $4(x - 3) = 28$</p> <p>(c) $3x + 8 = 6x - 7$</p>		<p>19.</p> <p>(a) $x = \dots\dots\dots$</p> <p>(b) $x = \dots\dots\dots$</p> <p>(c) $x = \dots\dots\dots$</p> <p>[6]</p>

Questions

Working

Answers

20. The table below shows the ferry timetable between the Scottish port of Claonaig and the town of Lochranza on the island of Arran:

DAILY												
DEPART - claonaig	-	0850	1005	1120	1235	1350	1505	1620	1750	1900	* NOT SUNDAYS	
ARRIVE - lochranza	-	0920	1035	1150	1305	1420	1535	1650	1820	1930		
		*								**		
DEPART - lochranza		0815	0930	1045	1200	1315	1430	1545	1715	1825	-	** CEASES AFTER 21st SEPTEMBER
ARRIVE - claonaig		0845	1000	1115	1230	1345	1500	1615	1745	1855	-	
		*								**		
FARES												
all tickets must be purchased before boarding vessel			single	5 day return	6 journey							
Passenger			£4.95	£8.40	£20.75							
Car or 4 x 4			£22.05	£37.50	£80.00							
Motorcycle			£11.05	£18.75	£40.00							
6 Journey tickets are valid for one passenger or one nominated motorised vehicle - not valid for caravans or trailers.												

20.

- (a) Where does the first ferry of the day leave from?
- (b) How long does it take the ferry to travel from Claonaig to Lochranza?
- (c) How many ferries are there from Lochranza to Claonaig on a Sunday in August?
- (d) A passenger goes to Lochranza for the day on Sunday 27 September. What is the latest time they can get back to Claonaig by ferry?
- (e) A passenger leaves Claonaig on the 1120 ferry and arrives back at 1615 on the same day. How long were they in Lochranza?
- (f) Martha works on the ferry. She starts at 10:00am at Claonaig. She travels backwards and forwards on the ferry until she finishes work at 6:00pm. How many journeys does she make?

(a)

(b) mins

(c) ferries

(d)

(e) hrs mins

(f) journeys [6]

Questions	Working	Answers
<p>21. Work out:</p> <p>(a) $-8 - 6$</p> <p>(b) $-4 - -7$</p> <p>(c) $-3 + -7$</p> <p>(d) -9×-2</p> <p>(e) $-32 \div -8$</p>		<p>21.</p> <p>(a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p> <p>(e)</p> <p>[5]</p>
<p>22. (a) Expand the brackets and simplify:</p> <p>(i) $5 (2 + 7x)$</p> <p>(ii) $3 (4x - 1) + 2 (x + 8)$</p> <p>(b) Solve:</p> <p>$2 (3x - 5) + 15 = 5 (x + 2)$</p>		<p>22.</p> <p>(a) (i)</p> <p>(ii)</p> <p>(b) $x =$</p> <p>[6]</p>
<p>23. (a) Work out 40% of £130</p> <p>(b) If 30% of a number is 51, what is that number?</p>		<p>23. (a) £</p> <p>(b)</p> <p>[4]</p>
<p>24. Express 0.04071</p> <p>(a) correct to 3 significant figures</p> <p>(b) correct to 3 decimal places</p>		<p>24.</p> <p>(a)</p> <p>(b)</p> <p>[4]</p>