

EXETER SCHOOL
12+ Entrance Examination 2013
MATHEMATICS
1 Hour


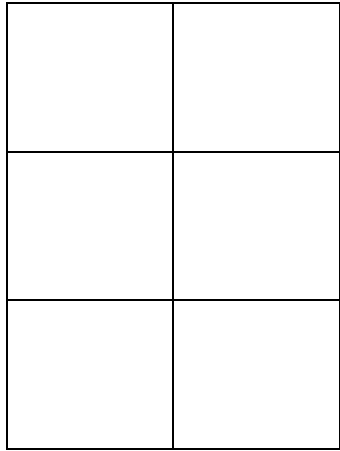
INSTRUCTIONS TO CANDIDATES

- 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. Work out, giving your answers as fractions in their simplest form: (a) $\frac{3}{10} + \frac{7}{15}$ (b) $\frac{4}{9} \times \frac{3}{8}$ (c) $\frac{3}{7} \div \frac{6}{11}$		2. (a) (b) (c)
		[6]

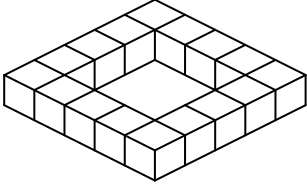
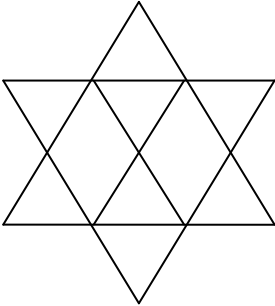
Questions	Working	Answers
<p>3. (a) Alastair starts with the number 22. First he subtracts 8, then he multiplies by 3, and finally he subtracts 11. What number does he finish with?</p> <p>(b) Alastair now starts with a different number, but does the same three operations. This time he finishes with the number 19. What number did he start with?</p>		<p>3.</p> <p>(a)</p> <p>(b)</p> <p>[4]</p>
<p>4. Ben is recording a music CD which can take up to 80 minutes of music. The shorter songs are 5 minutes long and the longer songs are 7 minutes long.</p> <p>(a) How many of the shorter songs can Ben fit on the CD?</p> <p>(b) If Ben puts as many of the longer songs on the CD as he can, how much time will there be left to fill?</p> <p>(c) If Ben wants to completely fill the CD, how many of each type of song could he put on?</p>		<p>4.</p> <p>(a) shorter songs</p> <p>(b) minutes</p> <p>(c) shorter songs</p> <p>..... longer songs</p> <p>[6]</p>
<p>5. (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>5.</p> <p>(a) £</p> <p>(b) packs</p> <p>[4]</p>

Questions	Working	Answers
<p>6. 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>6.</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>7. (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>7.</p> <p>(a) hrsmins</p> <p>(b)</p> <p>[4]</p>
<p>8. 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>8.</p> <p>Apples g</p> <p>Plums g</p> <p>Clementines g</p> <p>[6]</p>
<p>9. Fred cycles 6 miles to work each day at an average speed of 12 miles per hour.</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>9.</p> <p>(a)</p> <p>(b) mph</p> <p>[4]</p>

Questions	Working	Answers
<p>10. Graham's bedroom is rectangular and the width is 2m less than the length. The perimeter of the bedroom is 16m.</p>  <p>(a) How long is the longer wall of the bedroom?</p> <p>(b) What is the total floor area?</p>		<p>10.</p> <p>(a) m</p> <p>(b) m²</p> <p>[4]</p>
<p>11. Work out:</p> <p>(a) 2.41×3.7</p> <p>(b) $2.16 \div 0.9$</p>		<p>11.</p> <p>(a)</p> <p>(b)</p> <p>[4]</p>
<p>12. 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>12.</p>  <p>[6]</p>

Questions	Working	Answers
<p>13. (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>13.</p> <p>(a) (i)</p> <p>(ii)</p> <p>(b) and</p> <p>[6]</p>
<p>14. Write these numbers in order, smallest first:</p> <p>$\frac{1}{3}$, 0.23 , 0.3 , $\frac{1}{5}$, 32%</p>		<p>14.</p> <p>.....</p> <p>[4]</p>
<p>15. 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 between the two of them.</p> <p>(b) What fraction of the original cake do they each now get?</p>		<p>15.</p> <p>(a)</p> <p>(b)</p> <p>[4]</p>

Questions	Working	Answers
<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;"> <p>6.8 m</p>  <p>4.5 m</p> </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. The diagram below is made up of triangles. How many triangles, of any size, can you see?</p> 		<p>19.</p> <p>..... triangles</p> <p>[2]</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.

- (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?

20.

(a)

(b) mins

(c) ferries

(d)

(e) hrs mins

(f) journeys [6]