Name ……..……

E X E T E R S C H O O L

12+ Entrance Examination 2013

M A T H E M A T I C S

1 Hour

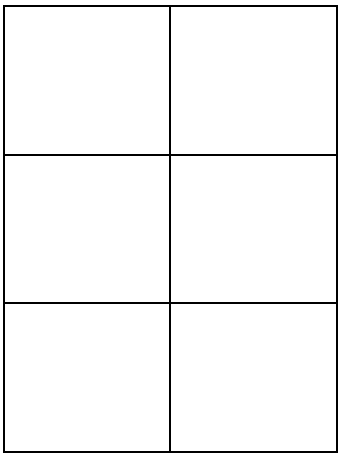
INSTRUCTIONS TO CANDIDATES

- 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 ÷ 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]

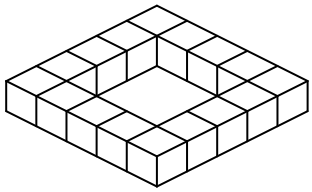
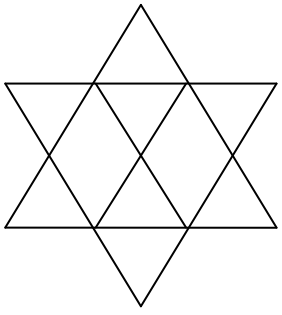
Questions	Working	Answers
3. (a) Alastair starts with the number 22. First he subtracts 8, then he multiplies by 3, and finally he subtracts 11. What number does he finish with? (b) Alastair now starts with a different number, but does the same three operations. This time he finishes with the number 19. What number did he start with?		3. (a) ..... (b) ..... [4]
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. (a) How many of the shorter songs can Ben fit on the CD? (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? (c) If Ben wants to completely fill the CD, how many of each type of song could he put on?		4. (a) ..... shorter songs (b) ..... minutes (c) ..... shorter songs ..... longer songs [6]
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? Each pack is the same weight. Twenty-two packs of sausages weigh almost exactly 10 kg. (b) Roughly how many packs of sausages would weigh 25 kg?		5. (a) £ ..... (b) ..... packs [4]

Questions	Working	Answers
6. Insert brackets <u>on the right</u> to make the statements below correct: (a) $2 \times 5 + 3 - 1 \times 4 = 12$ (b) $2 \times 5 + 3 - 1 \times 4 = 18$ (c) $2 \times 5 + 3 - 1 \times 4 = 56$		6. Insert brackets here: (a) $2 \times 5 + 3 - 1 \times 4 = 12$ (b) $2 \times 5 + 3 - 1 \times 4 = 18$ (c) $2 \times 5 + 3 - 1 \times 4 = 56$ [6]
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? (b) Ed ran a marathon in 138 minutes. He started running at 10:10am. At what time did he finish the marathon?		7. (a) ..... hrs .....mins (b) ..... [4]
8. Ten clementines weigh the same as twelve plums. Three plums weigh the same as thirty grapes. Six apples weigh the same as seven clementines. If a grape weighs five grams, find the weight of the other items.		8. Apples ..... g Plums ..... g Clementines ..... g [6]
9. Fred cycles 6 miles to work each day at an average speed of 12 miles per hour. (a) If he gets to work at 0835, what time did he leave home? Fred has to walk home because his bike is broken. He leaves at 1645 and gets home at 1815. (b) What was Fred's average speed on the journey home?		9. (a) ..... (b) ..... mph [4]

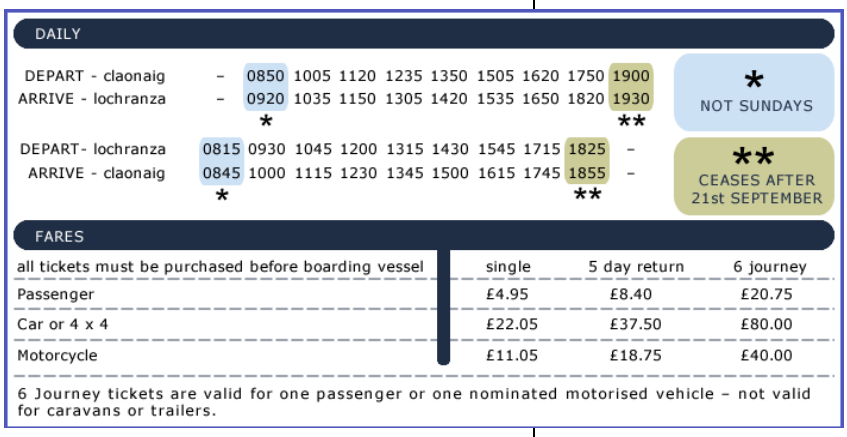
Questions	Working	Answers
10. Graham's bedroom is rectangular and the width is 2m less than the length. The perimeter of the bedroom is 16m.  (a) How long is the longer wall of the bedroom? (b) What is the total floor area?		10. (a) ..... m (b) ..... m² [4]
11. Work out: (a) 2.41×3.7 (b) $2.16 \div 0.9$		11. (a) ..... (b) ..... [4]
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: The top row has no odd numbers. The bottom row adds up to 4. The right column adds up to 14. The middle row adds up to 9.		12.  [6]

Questions	Working	Answers
13. (a) Write these fractions in their simplest form: (i) $\frac{32}{40}$ (ii) $\frac{25}{45}$ (b) Pick the pair of fractions in this list which are equal to each other: $\frac{9}{12}$ $\frac{7}{10}$ $\frac{12}{9}$ $\frac{6}{8}$		13. (a) (i) ..... (ii) ..... (b) ..... and ..... [6]
14. Write these numbers in order, smallest first: $\frac{1}{3}$, 0.23 , 0.3 , $\frac{1}{5}$, 32%		14. ..... [4]
15. Harold and Ian have a cake to eat. Harold eats one third of the cake and Ian eats two fifths of the cake. (a) What fraction of the whole cake do they eat altogether? They now decide to split the rest of the cake equally between the two of them. (b) What fraction of the original cake do they each now get?		15. (a) ..... (b) ..... [4]

Questions	Working	Answers
16. Jenny takes the train to school on four days a week for ten weeks. She can buy books of ten tickets for £19, or she can buy weekly tickets for £7.50 which she can use as often as she wants in that week. (a) Which is the cheaper option for Jenny – book of ten tickets or weekly ticket? (b) Over the ten weeks, how much would Jenny save with the cheaper option?		16. (a) ..... (b) £ ..... [4]
17. Ken is putting patio tiles in his back yard. He wants to fit as many tiles in the back yard as possible. 6.8 m *BACK YARD* 4.5 m Each tile measures 60cm by 60cm. (a) How many tiles can he fit in? (b) If the tiles cost £5.50 each, how much will it cost Ken to buy all the tiles he needs?		17. (a) .....tiles (b) £ ..... [4]

Questions	Working	Answers
18. Laura is arranging some boxes into a square shape with five boxes along each edge.  The square has the same number of boxes along each edge. There are no boxes in the middle of the square. (a) How many boxes are there? Laura then made a new square with seven boxes along each edge. (b) How many boxes are used? Laura then made a final square shape using exactly 40 boxes. (c) How many boxes are there along each edge of this square?		18. (a) ..... boxes (b) ..... boxes (c) ..... boxes [6]
19. The diagram below is made up of triangles. How many triangles, of any size, can you see? 		19. ..... triangles [2]

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:		20.



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?

(a) .....

(b) How long does it take the ferry to travel from Claonaig to Lochranza?

(b) ..... mins

(c) How many ferries are there from Lochranza to Claonaig on a Sunday in August?

(c) ..... ferries

(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?

(d) .....

(e) A passenger leaves Claonaig on the 1120 ferry and arrives back at 1615 on the same day. How long were they in Lochranza?

(e) ..... hrs ..... mins

(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?

(f) ..... journeys [6]