Name ……..……

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

14+ Entrance Examination 2013

M A T H E M A T I C S

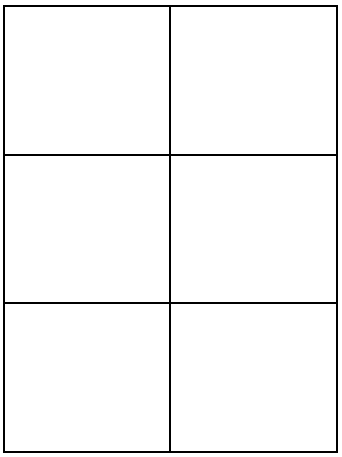
1 Hour 15 Minutes

INSTRUCTIONS TO CANDIDATES

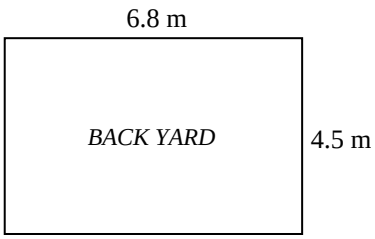
- Read the questions carefully.
- The marks available for each question are indicated at the right hand edge of the page.
- Use the space in the middle column of this paper for working out your answers.
- Write your final answers clearly in the right-hand column of this paper.
- If you have to alter 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.

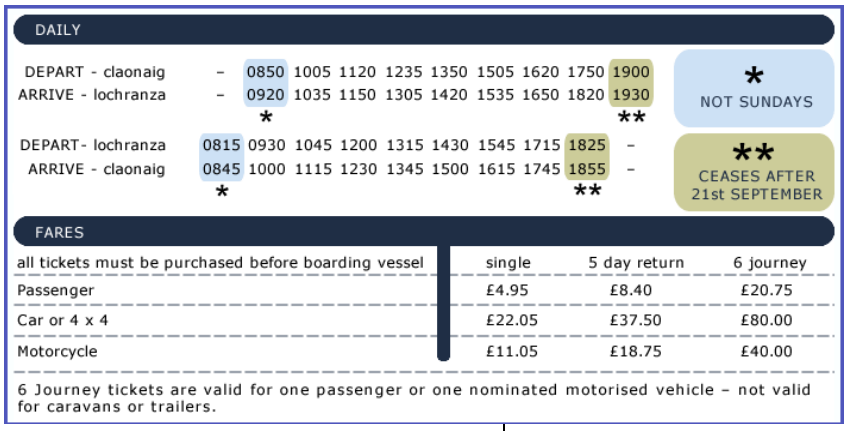
Questions	Working	Answers
1. Work out: (a) 314 + 152 + 261 (b) 582 – 215 (c) 273 × 3 (d) 552 ÷ 8 (e) 23 × 58		1. (a) ..... (b) ..... (c) ..... (d) ..... (e) ..... [10]
2. Work out, giving your answers as fractions in their simplest form: (a) $\frac{3}{10}+\frac{7}{15}$ (b) $\frac{4}{9}\times\frac{3}{8}$ (c) $\frac{3}{7}\div\frac{6}{11}$		2. (a) ..... (b) ..... (c) ..... [6]

Questions	Working	Answers
3. (a) 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?		3. (a) £ ..... (b) ..... packs [2]
4. 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) $2 \times 5 + 3 - 1 \times 4 = 56$		4. Insert brackets here: (a) $2 \times 5 + 3 - 1 \times 4 = 12$ (b) $2 \times 5 + 3 - 1 \times 4 = 18$ (c) $2 \times 5 + 3 - 1 \times 4 = 56$ [3]
5. (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?		5. (a) ..... hrs .....mins (b) ..... [2]
6. 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?		6. (a) ..... (b) ..... mph [4]

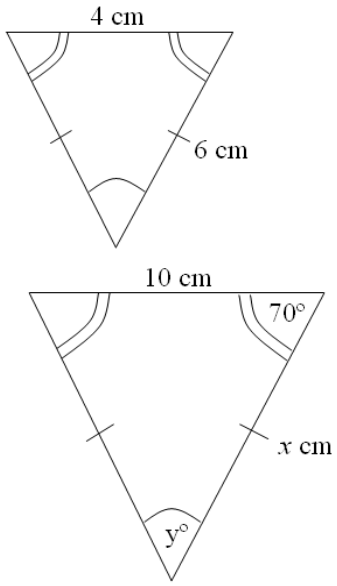
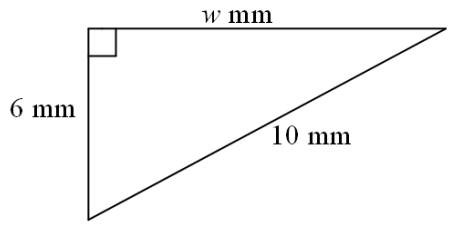
Questions	Working	Answers
7. Graham's bedroom is rectangular and the width is 2m less than the length. The perimeter of the bedroom is 16m.  (a) How long is the longer wall of the bedroom? (b) What is the total floor area?		7. (a) ..... m (b) ..... m² [4]
8. Work out: (a) 2.41×3.7 (b) $2.16 \div 0.9$		8. (a) ..... (b) ..... [4]
9. 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.		9.  [6]
10. (a) Expand the brackets and simplify: (i) $5 (2 + 7x)$ (ii) $3 (4x – 1) + 2 (x + 8)$ (b) Solve: $2 (3x – 5) + 15 = 5 (x + 2)$		10. (a) (i) ..... (ii) ..... (b) x = ... [6]

Questions	Working	Answers
11. (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: $\frac{9}{12}$ $\frac{7}{10}$ $\frac{12}{9}$ $\frac{6}{8}$		11. (a) (i) ..... (ii) ..... (b) ..... and ..... [3]
12. Write these numbers in order, smallest first: $\frac{1}{3}$, 0.23 , 0.3 , $\frac{1}{5}$, 32%		12. ..... [4]
13. 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?		13. (a) ..... (b) ..... [4]
14. If $a = 4$, $b = -3$, and $c = 2$, work out the value of: (a) $ca + b$ (b) bc^2 (c) $c - 2ab$		14. (a) ..... (b) ..... (c) ..... [6]

Questions	Working	Answers
15. 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?		15. (a) ..... (b) £ ..... [4]
16. Ken is putting patio tiles in his back yard. He wants to fit as many tiles in the back yard as possible.  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?		16. (a) .....tiles (b) £ ..... [4]
17. Solve the following equations: (a) $3x - 2 = 43$ (b) $4(x - 3) = 28$ (c) $3x + 8 = 6x - 7$		17. (a) x = ... (b) x = ... (c) x = ... [6]

Questions	Working	Answers
18. (a) Work out 40% of £130 (b) If 30% of a number is 51, what is that number?		18. (a) £ ..... (b) ..... [4]
19. The table below shows the ferry timetable between the Scottish port of Claonaig and the town of Lochranza on the isle of Arran:  DAILY DEPART - claonaig – 0850 1005 1120 1235 1350 1505 1620 1750 1900 ARRIVE - lochranza – 0920 1035 1150 1305 1420 1535 1650 1820 1930 * ** DEPART- lochranza 0815 0930 1045 1200 1315 1430 1545 1715 1825 – ARRIVE - claonaig 0845 1000 1115 1230 1345 1500 1615 1745 1855 – * ** * NOT SUNDAYS ** CEASES AFTER 21st SEPTEMBER 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?		19. (a) ..... (b) ..... mins (c) ..... ferries (d) ..... (e) ..... hrs ..... mins (f) ..... journeys [6]

Questions	Working	Answers
20. Work out: (a) $-8 - 6$ (b) $-4 - -7$ (c) $-3 + -7$ (d) -9×-2 (e) $-32 \div -8$		20. (a) ..... (b) ..... (c) ..... (d) ..... (e) ..... [5]
21. Work out, giving your answer as a <u>single</u> fraction in its simplest form: (a) $\frac{7}{12}+\frac{2}{9}$ (b) $6\frac{1}{3}-4\frac{3}{4}$ (c) $\frac{10}{9}\times\frac{3}{4}$ (d) $\frac{6}{5}\div\frac{9}{10}$		21. (a) ..... (b) ..... (c) ..... (d) ..... [8]
22. Calculate: (a) $560 \div 70$ (b) 0.003×170 (c) 0.06×0.09 (d) $35 \div 0.07$ (e) $0.06 \div 30$		22. (a) ..... (b) ..... (c) ..... (d) ..... (e) ..... [10]

Questions	Working	Answers
23. Express 0.04071 (a) correct to 3 significant figures (b) correct to 3 decimal places		23. (a) ..... (b) ..... [4]
24. The two triangles below are similar.  (a) What is the value of x? Both shapes are isosceles triangles. (b) What is the size of angle y?		24. (a) x = ... (b) y = ... ° [4]
25. The triangle below is right-angled.  (a) What is the value of w? (b) What is the area of the triangle? (c) What is the triangle's perimeter?		25. (a) w = ... (b) ..... mm^2 (c) ..... mm [6]