Name:

OUNDLE
School

Junior Entrance and Scholarship Examination 2014
First Form Entry

Mathematics

Time Allowed: 1 hour

Instructions

- All candidates must answer Section A (but *may* attempt questions from Section B if they have time).
- Scholarship candidates must answer Sections A and B. It is suggested that these candidates spend no more than 45 minutes on Section A.
- All working and answers must be shown on this paper. Marks will be given for demonstrating your method.
- Calculators are ***not*** permitted.

Section A

1. (a) Work out 45 + 97.

Answer ……

(b) Work out 30732 – 2858.

Answer ……

(c) Work out 69 × 32.

Answer ……

(d) Work out 765 ÷ 3.

Answer ……

(e) Work out 765 ÷ 45.

Answer ……

(g) Work out 23 456 + 47 651 – 23 455.

Answer ……

2. Write as a number: Eight hundred million eight thousand and twenty four.

Answer ……

3. Calculate the following

(a) $1 + 2 - 3 + 4 - 5$

Answer ……

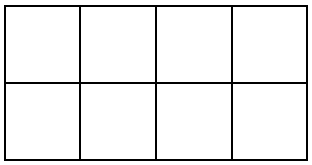
(b) $1 \times (-2) \times 3 \times (-4) \times 5$

Answer ……

(c) $(1 + (2 - 3) - 4) \times 5$

Answer ……

4. (a) How many squares, of *any* size, appear in the diagram below?



Answer ……

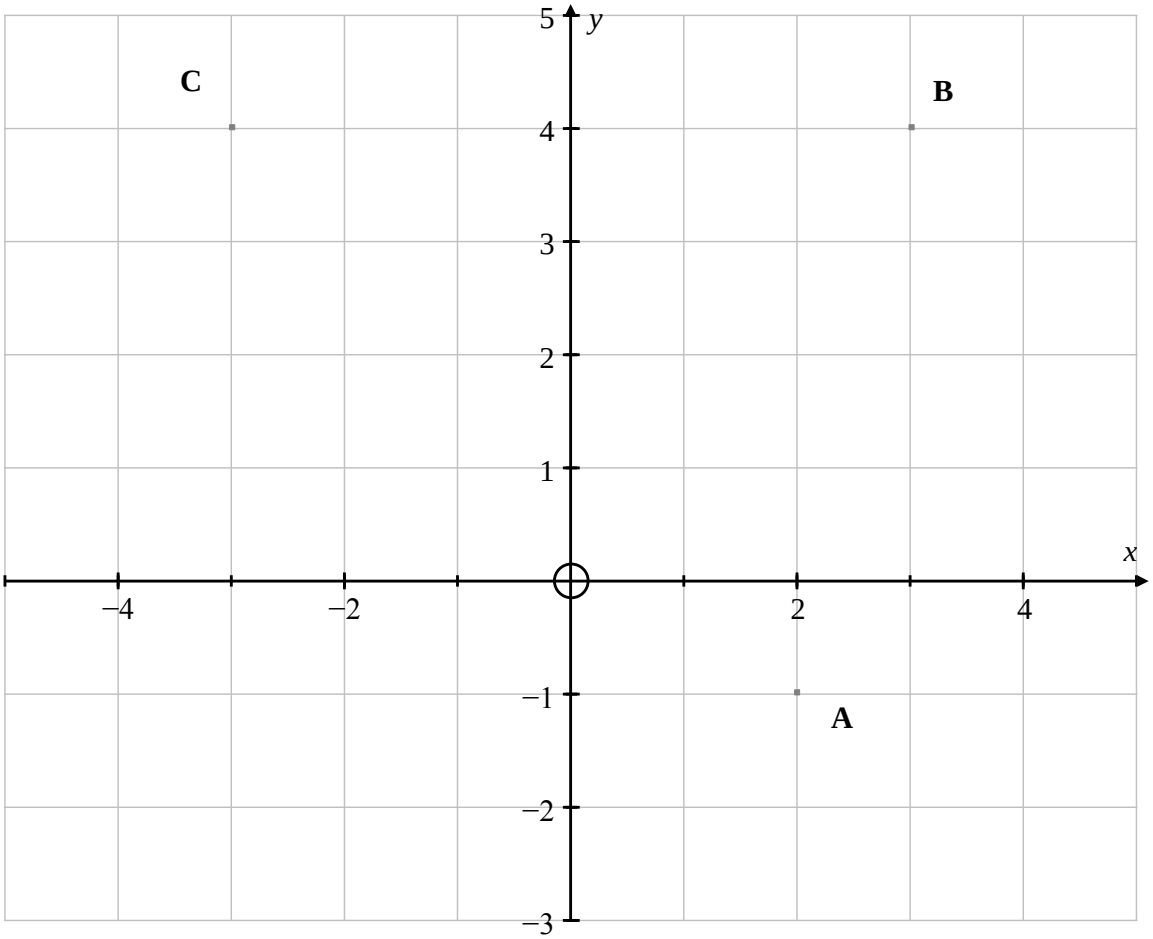
(b) The diagram above showed a 2×4 rectangle.
How many squares, of *any* size, would appear in a similar diagram of a 3×5 rectangle?

Answer ……

(c) In a $2 \times n$ diagram, there are 2999 squares.
What is the value of n?

Answer ……

5. (a) Write down the coordinates of the points marked A, B and C.



Answer: A is at (..... , ...) B is at (..... , ...) C is at (..... , ...)

(b) Write down the name of the shape formed by the points ABC.

Answer …….....……

(c) Find the area of the shape formed by the points ABC.

Answer …….....……

(d) At what coordinates should a 4th point, D, be placed so that the shape ABCD is a parallelogram?

Answer …….....……

6. In each sequence below, there is a rule for finding the next term.
Find the next *two* terms in each sequence by identifying the rule.

(a) 8, 5, 2, −1,

Answers ……., …….

(b) 8.6, 9.7, 10.8, 11.9,

Answers ……., …….

(c) 1, 2, 4, 8,

Answers ……., …….

7. Albert was using his calculator to work out the answers to some calculations. He couldn't remember which answer went with which question though. Match each question with the correct answer by *estimating*. *Show the numbers you have used to make your estimations.*

Questions	Answers
$\frac{49 \times 208}{191}$	26.12844037
$19.78^2 + \sqrt{10007}$	491.2833939
$(113 - 24)(32 \div 109)$	2.009843660
$\frac{89}{22} \times \frac{234}{471}$	53.36125654

You may use this blank space for any calculations you do, but make sure to pair up the questions and answers above.

8. Write the following numbers in order, starting with the lowest.

$$\frac{4}{7} \qquad -\frac{3}{7} \qquad \frac{10}{14} \qquad -\frac{2}{7} \qquad \frac{6}{7}$$

Answer ……, ……, ……, ……, ……

9. (a) I think of a number, then subtract nine. The result is seventeen.
What was the original number?

Answer ……

(b) I think of a number, multiply it by three, then subtract nine. The result is forty-five.
What was the original number?

Answer ……

(c) I think of a number, double it, then add five. The result is minus thirteen.
What was the original number?

Answer ……

10. Find

(a) 33% of 150.

Answer: ……

(b) $\frac{5}{8}$ of 136.

Answer: ……

11. You have the numbers −7, −1, 0.5 and 9 available.
Any of these numbers can be used in each part of the question.

(a) What is the highest number that can be obtained by adding two of the above numbers?

Answer: ……

(b) What is the lowest number that can be obtained by adding two of the above numbers?

Answer: ……

(c) What is the highest number that can be obtained by subtracting two of the above numbers?

Answer: ……

(d) What is the lowest number that can be obtained by multiplying two of the above numbers?

Answer: ……

12. Write down the missing number in each part:

(a) 1 400 × ? = 70 000

Answer: .....

(b) 1400 × ? = 700

Answer: .....

(c) 1400 ÷ ? = 7

Answer: .....

13. (a) What is the angle between the hands of a clock at 3:00?

Answer: ……

(b) What is the angle between the hands of a clock at 3:15?

Answer: ……

14. Calculate $3428 \times 836 + 3428 \times 162 + 3428 \times 2$.

Answer: ……

15. On the next page is the timetable for a bus service between Peterborough and Milton Keynes.
Use the timetable to answer the following questions.

(a) What time is the first bus from Peterborough Queensgate?

Answer: ……

(b) What time is the first bus from Corby Business Academy on a Saturday?

Answer: ……

(c) Betsy takes the 0756 from Corby rail station.
How long does the journey to Wellingborough Church Street take?

Answer: ……

(d) Carmen takes the 1252 from Weldon.
At what time does she arrive at Roade?

Answer: ……

(e) Archie needs to arrive at Earls Barton by 2:30pm.
What is the latest bus he can take from Corby Danesholme Road?

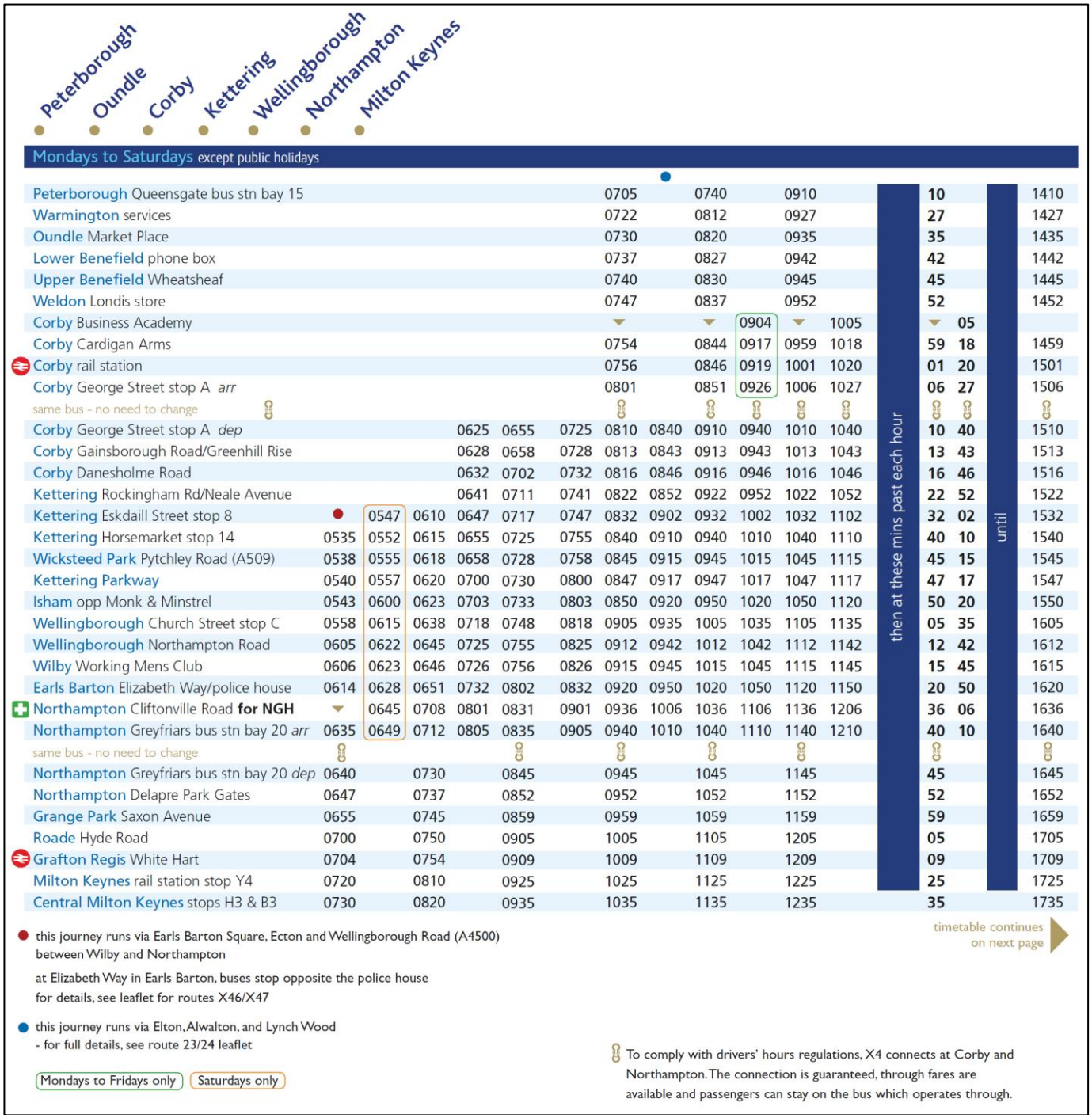
Answer: ……

(f) Darcy catches the 1317 bus from Kettering Parkway.
What is the earliest time she can arrive at Grafton Regis?

Answer: ……

(g) How many times does this bus service stop at Corby Rail Station between 0700 and 1502 on a Wednesday?

Answer: ……



Above - Sample from a bus timetable

Section B

1. The pattern 123451234512345… is continued to form a 2000-digit number.
   What is the sum of all 2000 digits?

Answer ……

2. Einstein can afford to buy either 6 apples and 7 bananas or else 8 apples and 4 bananas. Both options leave him with no change whatsoever. If, however, he bought only bananas, who many could he afford?

Answer ……

3. (a) In the England tiddly-winks squad there are five players.
A team of three is to be selected to compete.
How many different teams of three are possible?

Answer ……

(b) The team of three play one game each.
If none of these matches are played at the same time, how many different orders could the games be played in?

Answer ……

(c) There is also an individual knockout tournament in which 16 people are allowed to enter.
How many games are played to decide the winner? *(The loser in each game is out of the tournament)*

Answer ……

4. Seven rolls weigh the same as four crumpets. Five scones weigh the same as six crumpets. Each crumpet weighs c grams, and each roll weighs r grams, and each scone weighs s grams.
Write c, r and s in order of size, starting with the smallest.
(Explain your reasoning carefully – few marks will be awarded for an isolated answer).

Answer ……

5. Paul and Quentin are running directly towards each other. They start from the points A and B respectively.
Paul runs at 5miles per hour, and Quentin runs at 7 miles per hour.

(a) If they meet after 10 minutes, how far apart are the points A and B in miles?

Answer ……

(b) The point M is half-way between A and B.
Who passes this point before they meet, and how long after they set out does this person pass M?

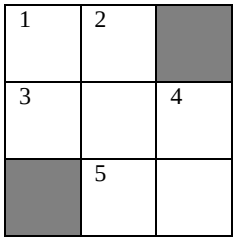
Who ……

When ……

6. A crossnumber is like a crossword, except that all the answers are numbers instead of words (with one digit in each square, and no answer starting with the digit zero).
How many different solutions are there to the crossnumber below?
(You must explain your reasoning carefully, including why there are no more than the number you calculate)

Clues

ACROSS	DOWN
1. Prime	1. Prime
3. Square	2. Square
5. Prime	4. Square



Answer ……