

# Junior Entrance Examination 2013 <br> Second Form Entry 

## Mathematics

## Section A: 30 minutes No calculators allowed

- Write ALL your working and answers on this paper. Show enough working on each question to make it clear how you reached your answer.


## Underline your answers.

- Do not spend too long working on any particular question. Do not worry if you do not manage to complete every question in each section.
- You may work in pen or pencil.


## Section A NO CALCULATORS

1. Work out:
(a) $691+39$
(b) $68 \times 19$
(c) $11696 \div 8$
(d) $80 \%$ of 80
(e) $\frac{7}{12}+\frac{3}{8}$
(f) $\quad 4 \frac{1}{6} \div 1 \frac{2}{3}$
2. Work out the following:
(a) $3-10=$
(b) $3 \times(-10)=$
(c) $4-5+6-7=$
(d) $(-3) \times(-4)=$
3. Fill in the gaps with $+-\div \times(\quad)$ to make these statements work:
(a) $53 \quad 9=6$
(b) $53 \quad 9=32$
(c) $93=8$
4. Complete the following table:

| Fraction (in its simplest form) | Percentage | Decimal |
| :---: | :---: | :---: |
| $\frac{1}{5}$ |  | 0.2 |
|  | $65 \%$ |  |
| $1 \frac{3}{4}$ |  | 0.003 |

5. My train was scheduled to leave at $16: 20$ and to arrive at 17:05.

However, it left 6 mins late and the journey took 42 minutes. What time did I arrive?
6. Fill in the next three terms of the following sequences:
(a) $4,7,10,13, \ldots . .$.
(b) $95,87,79,71$, $\qquad$
$\qquad$
$\qquad$
(c) $32,16,8,4$,
(d) $2,3,5,7,11$, $\qquad$
$\qquad$
7. Simplify the following algebraic expressions:
(a) $x+x+x+x+x=$
(b) $5+x+5+x=$
(c) $5 \times x \times x=$


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## Mathematics

## Section B: 30 minutes Calculators allowed

- Write ALL your working and answers on this paper. Show enough working on each question to make it clear how you reached your answer.


## Underline your answers.

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- You may work in pen or pencil.


## Section B You may use a calculator for this section.

1. (a) Name the two shapes in the diagram below: $\qquad$ and $\qquad$
(b) Find the area of the shape below (which is not drawn to scale):

2. A chocolate cake recipe contains several ingredients, including cocoa powder and butter.

All the ingredients used together weigh 580 g .
The ratio of cocoa : butter : other ingredients is $1: 3: 16$.
(a) How much butter is in the cake?
(b) If there is 261 g of flour in the cake, what is the ratio of flour to butter?
3. (a) If I score 38 out of 75 in a Chemistry test, what percentage did I score? Give your answer correct to one decimal place.
(b) Decrease $£ 820$ by $12 \%$.
4. A model car travels 1200 m in 15 minutes.
(a) How far would it travel in 2 hours?
(b) How long would it take to travel 5 km ?
5. James is organising a barbecue.

There are 30 bread rolls in a pack and there are 8 sausages in a pack. He needs exactly the same number of bread rolls as sausages.
What is the smallest number of each pack that he must buy? Show all your working.
6. A factorial (which has a symbol ! ) can be defined as follows:
$6!=6 \times 5 \times 4 \times 3 \times 2 \times 1$
10! $=10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$

Work out the following:
(a) 5 !
(b) 6 ! -5 !
(c) $\frac{8!}{6!}$
(d) $\frac{100!}{99!2!}$
(e) $\frac{(x+1)!}{x!}$

