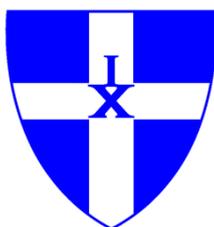# The King's School, Canterbury

Entrance Examinations (14+)

2012

Mathematics

One Hour

Answer as many questions as possible, presenting your answers clearly and neatly and showing all relevant working in the correct spaces on the paper.

Calculators may be used in any question unless stated otherwise. In a question where a calculator is prohibited, your working must display sufficient detail to show that it has not been used.

If you cannot do a question, leave it and go on to the next. You might need to work fast to get to the end of the paper. There are 75 marks in total.

NAME: .... **AGE:** ....

PRESENT SCHOOL: ....

Total:	**/75 = %**

1. Write these numbers in order of size, from smallest to largest.

(a)   37   84   9   127   24

....
(1)

(b)   4   − 6   1   − 3   − 1

....
(1)

(c)   0.975   0.99   0.0995   0.009   0.12

....
(1)
(Total 3 marks)

2. Mrs Singh takes her 2 children to the cinema.
She pays for 1 adult ticket and 2 child tickets.
Tickets cost £7.40 for an adult and £4.60 for a child.
She pays with a £20 note.
How much change should she receive from £20?

£ ………………..
(Total 3 marks)

3. Simplify

(i) $7g - 2g$

…………………

(ii) $f \times h \times 5$

………………………

(iii) $p \times p \times p$

………………..
(Total 3 marks)

4. The price of the TV was £80
The price increases by 15%.

Work out the new price of the TV.

£…………………………….

(Total 3 marks)

5. $G = 5t$

(a) Find the value of G when $t = 6$

G =………………..

(1)

$H = k + m - 4q$

$k = 10$
$m = 20$
$q = 4$

(b) Find the value of H.

H =………………

(2)

(Total 3 marks)

6. Rashmi has a bag of 24 sweets.

9 sweets are mint flavour,
13 sweets are strawberry flavour,
2 sweets are chocolate caramel flavour.

Rashmi takes, at random, a sweet from the bag.

Write down the probability that Rashmi

(a) takes a strawberry flavour sweet,

………………
(1)

(b) does **not** take a mint flavoured sweet,

……………
(1)

(c) takes a lime flavoured sweet.

……………
(1)
(Total 3 marks)

7. Jim and Abbi share some money in the ratio 1:4

(a) Find the percentage of the money that is Jim's share.

………………………….%
(2)

Imran and Helen share £180 in the ratio 2:3

(b) Work out how much money Helen will get.

£………………………….
(2)
(Total 4 marks)

8.   (a) Solve $3q + 11 = -1$

$q =$ ……………
(2)

(b)   Solve $9a + 5 = 4a + 8$

$a =$ ……………
(2)
(Total 4 marks)

9.   The total cost of 3kg of apples and 2 kg of lemons is £5.76

4 kg of apples cost £5.12

Work out the cost of 1 kg of lemons.
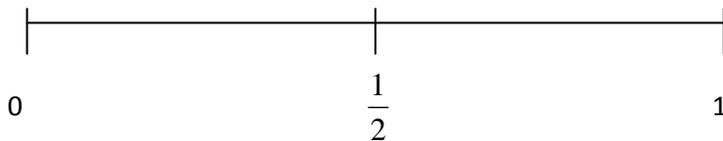
……………………………
(Total 3 marks)

10. (a) Expand and simplify $2(3y + 5)$

……………………………
(1)

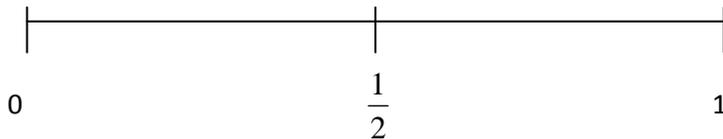(b) Expand and simplify $3(2m + 1) - 2(m - 1)$

……………………………
(2)
(Total 3 marks)

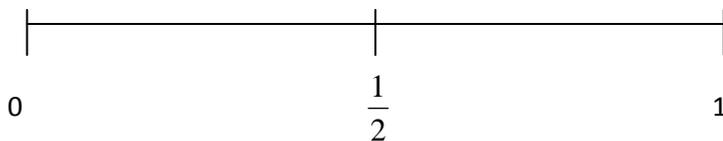**11.** (a) On the probability scale below, mark with a cross (×) the probability that it will snow in London in June.

```
|—————————————|—————————————|
0            1             1
             —
             2
```

(1)

(b) On the probability scale below, mark with a cross (×) the probability that it will rain in Manchester next year.

```
|—————————————|—————————————|
0            1             1
             —
             2
```

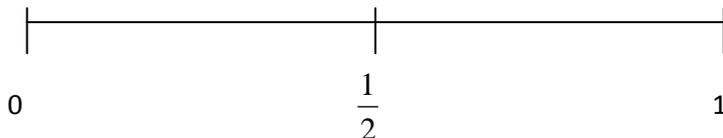**(1)**

(c) On the probability scale below, mark with a cross (×) the probability that you will get a head when you flip a fair coin.

```
|—————————————|—————————————|
0            1             1
             —
             2
```

(1)

(d) On the probability scale below, mark with a cross (×) the probability that you will get a number less than 3 when you roll an ordinary dice.

```
|—————————————|—————————————|
0            1             1
             —
             2
```

(1)
(Total 4 marks)

12. Rajeev uses this formula to work out his pay.

$$\text{pay} = \text{rate per hour} \times \text{hours worked}$$

(a) One day, Ranjeev works for 6 hours at the rate of £8 per hour.
Work out Ranjeev's pay.

£ ....
(1)

(b) Another day, Ranjeev is paid £72.
The rate was £8 per hour.
Work out how many hours Ranjeev worked.

.... hours
(2)
(Total 3 marks)

13. $y = 3p - 4q$

$p = -12, q = -3$

(a) Find the value of *y*.

....

(2)

(b) Rearrange $y = 3p - 4q$ to make *p* the subject.

p = ...

(2)

(Total 4 marks)

14. A salesman gets a basic wage of £80 per week plus a commission of 30% of the sales he makes in that week.

In one week his total wage was £800

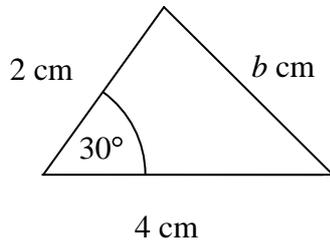Work out the value of the sales he made that week.

£..............................

(Total 4 marks)

15.

Diagram **NOT**
accurately drawn

2 cm   *b* cm   5 cm   8 cm

30°   30°

4 cm   *a* cm
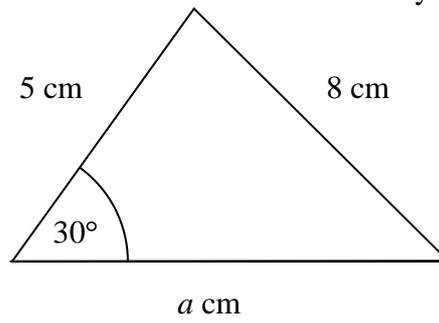
The diagram shows two triangles.
The triangles are similar.

(a)   Calculate the value of *a*.

...........................cm
(2)

(b)   Calculate the value of *b*.

...........................cm
(2)
(Total 4 marks)

16. (a) Solve $5(y - 2) = 30$

y = ...
(3)

(b) Expand and simplify $(m + 5)(m + 2)$

....
(2)
(Total 5 marks)

17.

Diagram **NOT** accurately drawn

$\longleftarrow 2\frac{1}{2}\,\text{inches}\longrightarrow\longleftarrow 1\frac{2}{3}\,\text{inches}\longrightarrow$
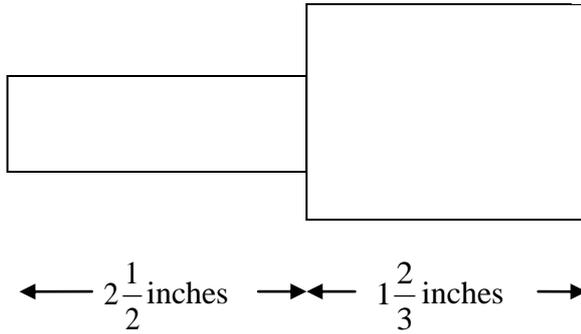
Work out the total length of the shape **WITHOUT A CALCULATOR**.

Give your answer as a **mixed** number.

...............................inches

(Total 5 marks)

18.

Diagram **NOT** accurately drawn

A, B and *C* are points on the circumference of a circle, with centre *O*.

(i)   Work out the size of angle *AOB.*

...........................°

(ii) Give a reason for your answer.

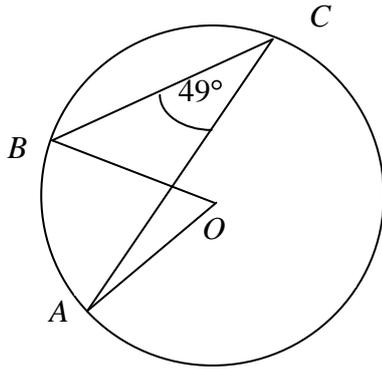..

....

(Total 2 marks)

19. A English exam has two sections, section A and section B.

Section A is out of 40.
Section B is out of 20.

Nish scored 45 marks for the two sections.

Belinda scored 75% in section A and 60% in section B.

Who scored the higher marks?
Explain your answer.

....

....

....

....

(Total 4 marks))

20. £5,640 is divided between three people *A*, *B* and *C* in such a way that

A receives £1,000 more than *B*, and *B* receives $\dfrac{3}{4}$ of the amount *C* receives.

Work out how much each receives.

....
(Total 5 marks)

21. (a) Calculate the gradient of the straight line through points A(0,3) and B(4,4)

....
(2)

(b) Find the equation of the straight line AB

....
(2)

(c) Find the equation of the straight line through the origin O (0,0) which is parallel to the line AB.

....
(2)
(Total 6 marks)

END OF EXAMINATION.
PLEASE NOW GO BACK AND CHECK YOUR WORK