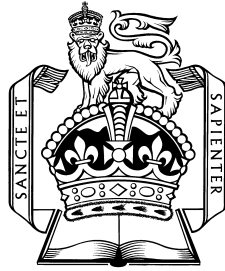


KING'S COLLEGE SCHOOL



TRANSFER PAPER

SPECIMEN

MATHEMATICS

Time Allowed:

1 hour

Name:

Form

***No calculators allowed
Give the correct units when necessary***

1. Work out:

a) $20 - 4 \times 2 + 9 \div 3$ (2 marks)

b) $\sqrt{4 + 12}$ (2 marks)

c) 65% of 400 (2 marks)

d) 24 as a percentage of 40 (2 marks)

e) 0.002 as a fraction in its lowest terms (2 marks)

f) $\frac{7}{20}$ as a decimal (2 marks)

2. Alice buys a chocolate bar for £0.47, a packet of crisps for 55p and a drink for £1.20
How much change does she get from £5.00?

..... (2 marks)

3. Tim buys a packet of 6 cakes and a doughnut.

He spends £3.00 altogether and the doughnut costs 42p, find the cost of each cake.

..... (2 marks)

4. Sue buys 7 pens for £1.49 each. How much does she spend altogether?

..... (2 marks)

Turn Over

5. 18 rulers cost £5.76. Find the cost of each ruler.

.....
(2 marks)

6. In a sale, prices are reduced by 20%. Originally, a t-shirt cost £17.50.
How much does it cost in the sale?

.....
(2 marks)

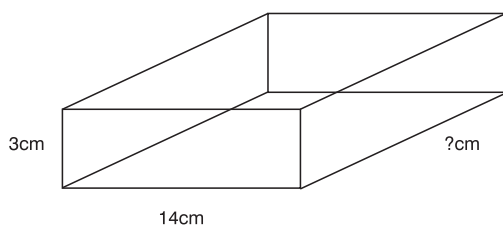
7. A full bucket of sand weighs 850 grams.
A child builds a sand castle using 65 full buckets of sand.
How much does the sand castle weigh in kilograms?

.....
(2 marks)

8. A cuboid shaped box has a volume of 840 cm^3 .
Two of the sides measure 3 cm and 14 cm.
a) What is the length of the longest side of the box?

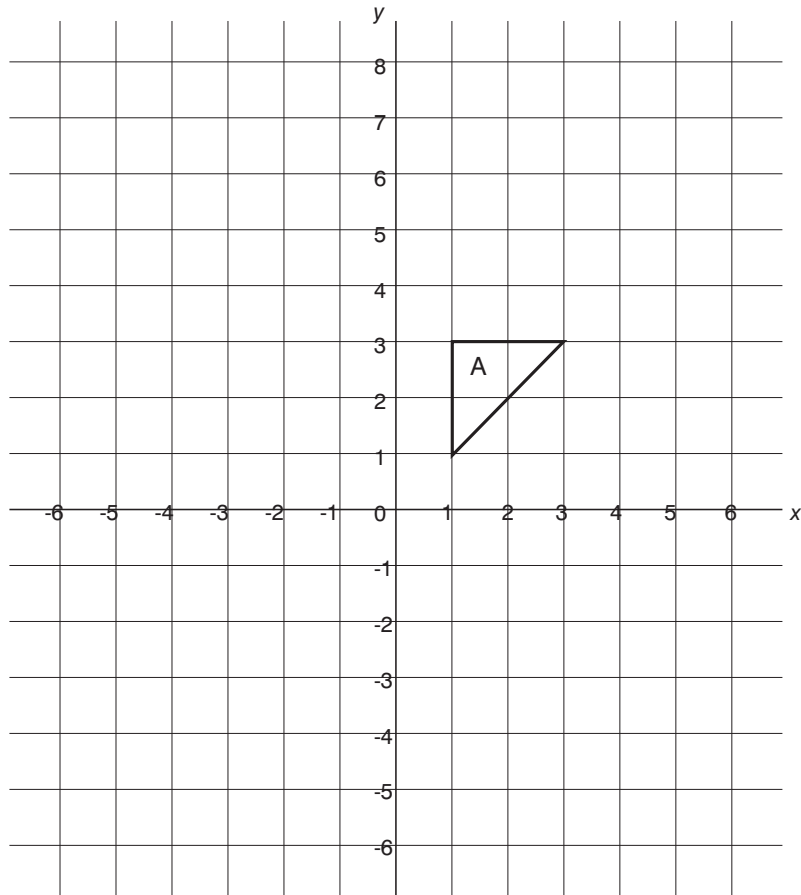
.....
(2 marks)

b) Little cubes with sides of length 2 cm are packed into the box.
How many cubes will completely fill the box?



.....
(2 marks)

9.

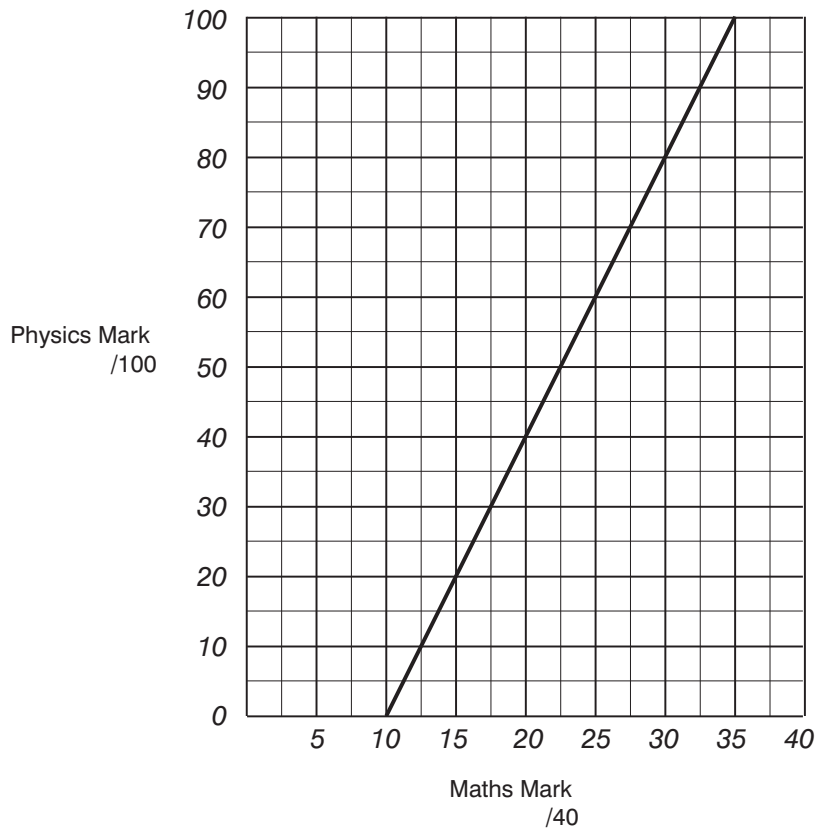


- a) Rotate triangle A 180° about the point $(-1, 1)$ and label the image B. (2 marks)
- b) Reflect triangle A in the line $y=4$ and label the image C. (2 marks)
- c) Translate triangle A 6 units left and 2 units up. Label the image D. (2 marks)

Turn Over

10. The graph below predicts the mathematics mark of a student given his physics mark and vice versa.

Use the graph to answer the following questions, showing clearly where you take your readings.



a) George scores 20 out of 40 marks in his maths test.
What is his predicted physics mark out of 100?

(2 marks)

.....

b) Andrew scores 80% in his physics test.
Predict the **percentage** he gets in his maths test.

(2 marks)

.....

11. A group of 7 people share 5 pizzas between them.

Give your answers as a mixed fraction

Katie eats $\frac{3}{4}$ of a pizza and Sally eats $1\frac{2}{5}$ pizzas.

a) How many pizzas do Katie and Sally eat altogether?

.....
(2 marks)

b) How many pizzas remain uneaten

.....
(2 marks)

c) The remaining 5 people equally share what remains of the pizzas.
What fraction of a pizza does each person get?

.....
(2 marks)

12. A bouncy ball is dropped from a height of 9m.

Each time it bounces back up again it has lost $\frac{5}{8}$ m of height.

After how many bounces has the height dropped to 4m?

.....
(2 marks)

13. Spot the dog eats $\frac{2}{3}$ kg of doggy nibbles a day.

How many kilograms of doggy nibbles does he eat in 60 days?

.....
(2 marks)

14. Sarah's crispy lemon cake contains flour and sugar in the ratio 5 : 3.

- a) If Sarah uses 600g of flour to make a small cake then how much sugar should she use?

..... (2 marks)

- b) If Sarah uses 1.6kg of flour and sugar altogether to make a large cake, then how many kilograms of flour did she use?

..... (2 marks)

15. If $T = \sqrt{\frac{l}{g}}$ find the value of T when $l = 1440$ and $g = 10$.

..... (2 marks)

16. Simplify:

a) $5y^2 - 2y^3 + y^3$

..... (2 marks)

b) $3y^2 \times 5y^6$

..... (2 marks)

c) $(2y^5)^3$

..... (2 marks)

d) $\frac{10y^4}{8y^9}$

..... (2 marks)

17. Leave your answers as a fraction if necessary.

Given that $a=5$ and $b=-2$ find the value of:

a) $\frac{1}{2} ab$ (2 marks)

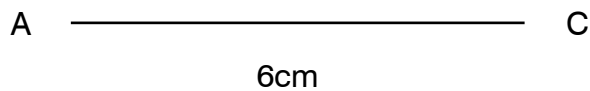
b) $\frac{5a - b}{3}$ (2 marks)

c) $\frac{a - 5b}{2a + 1 - 2b}$ (2 marks)

d) $4a - b^2$ (2 marks)

18. An isosceles triangle ABC has lengths $AB = BC = 5$ cm. The base, $AC = 6$ cm.
The line AC has been drawn for you.

a) Draw triangle ABC accurately using a compass.

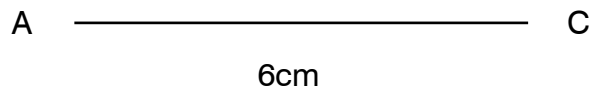


(2 marks)

b) If X is the midpoint of AC then find the height, BX of the triangle.

..... (2 marks)

- c) Two of these triangles are joined up to make a kite.
The line AC has been drawn for you. Draw the kite accurately using a compass.



(2 marks)

- d) What is the area of the kite?

..... *(2 marks)*

19. Abbie runs 560 metres in 70 seconds at a steady pace.

What is her average speed in metres per second?

..... (2 marks)

20. A bus leaves Leeds at 21:15 and arrives in Wimbledon at 04:05 the next day.

How long did the journey last? Give your answer in hours and minutes.

..... (2 marks)

21. a) Write both 48 and 180 as a product of their prime factors.

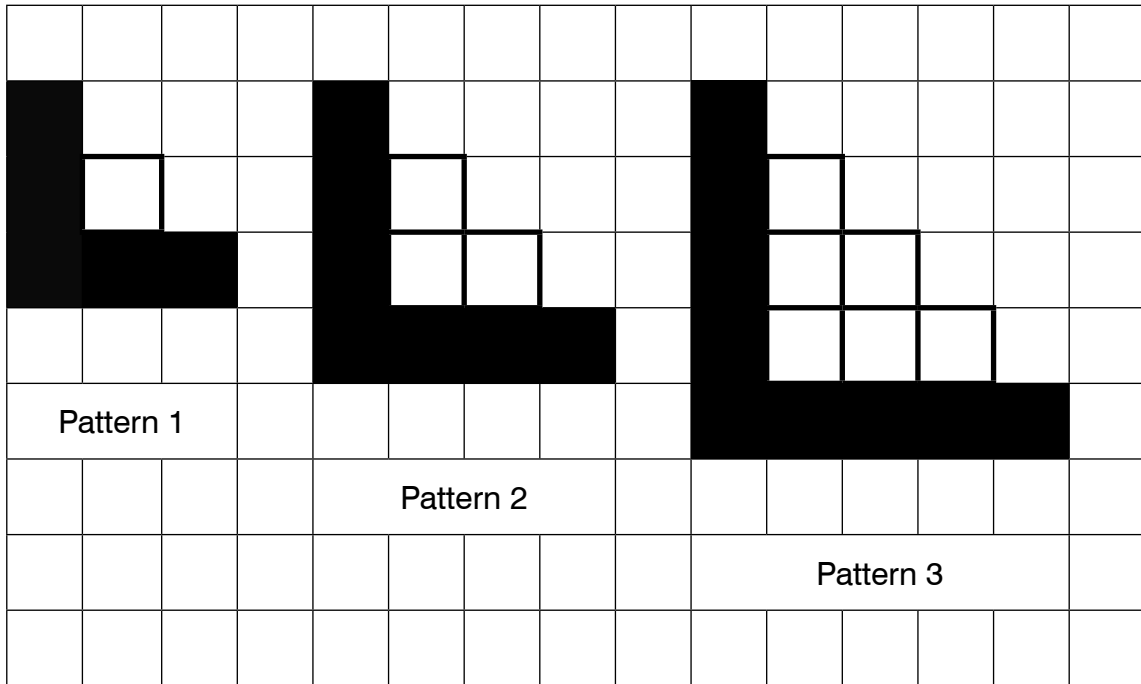
48 = 180 = (2 marks)

b) What is the smallest number that can be divided exactly by 48 and 180?

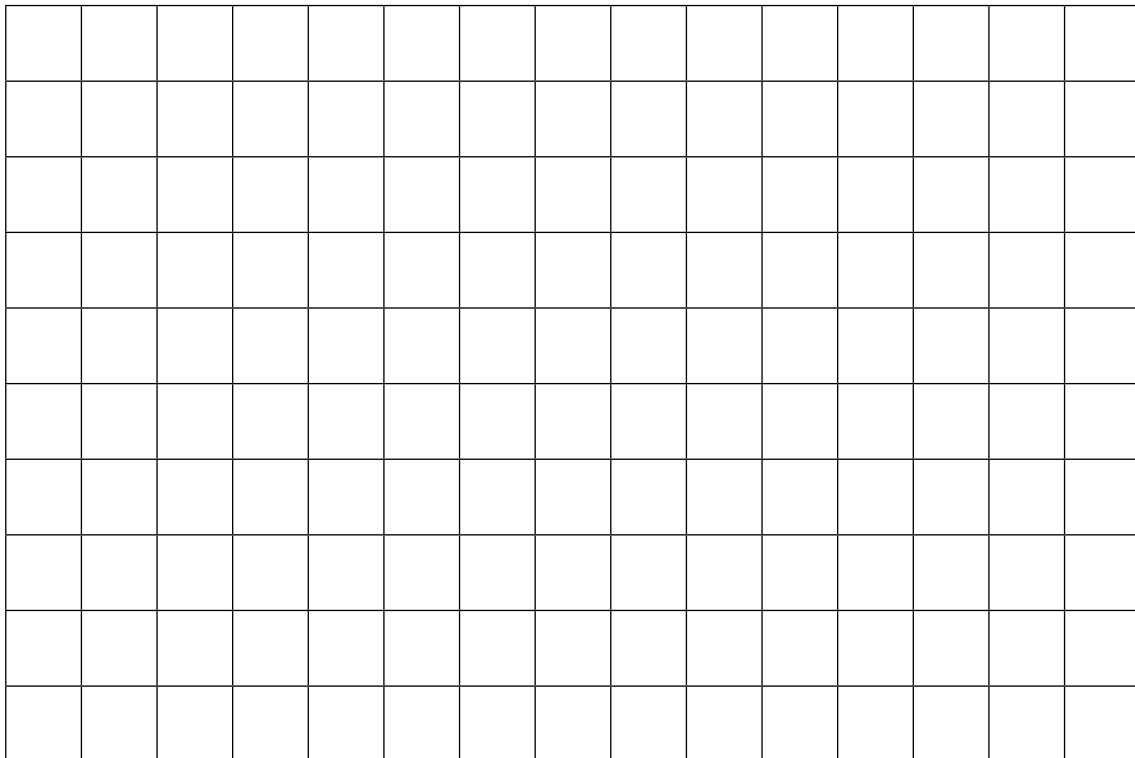
..... (2 marks)

Turn Over

22. The patterns below are made up of shaded and unshaded little squares.
 The shaded squares make up L-shapes and the shaded and unshaded squares together make up step-shapes.



a) Draw pattern 4:



(2 marks)

b) Write down the next two numbers in the sequence for the unshaded squares:

1, 3, 6, 10, __, __

..... and (2 marks)

c) Write down the next two numbers in the sequence for shaded squares:

5, 7, 9, __, __

..... and (2 marks)

d) How many shaded squares are there in the n^{th} pattern?
Give your answer in terms of n .

..... (2 marks)

e) How many shaded squares are there in the 17th pattern?

..... (2 marks)

f) Is it possible for a pattern to have 202 shaded squares?

..... (2 marks)

g) A pattern has 301 shaded squares. What is the number of this pattern?

..... (2 marks)

Total: 100 marks