EPSOM

COLLEGE

MATHEMATICS

SPECIMEN PAPER

FOR CANDIDATES APPLYING TO YEAR 9 OR YEAR 10

TOTAL TIME ALLOWED: ONE HOUR 30 MINUTES

Section A – 45 minutes (Calculator permitted)

Section B – 45 minutes (Calculator not permitted)

Write your answers on the question paper in the spaces provided.

All working should be shown in the spaces provided.

Answer all the questions.

Section A – You may use a calculator

1. (a) Use your calculator to work out

$$(2.3 + 1.8)^2 \times 1.07$$

Write down all the figures on your calculator display.

.....

(2)

(b) Put brackets in the expression below so that its value is 45.024

1.6 + 3.8 × 2.4 × 4.2

(1)

(Total 3 marks)

2. (a) Solve $7x + 18 = 74$

$x =$ .....

(2)

(b) Solve $4(2y – 5) = 32$

$y =$ .....

(2)

(c) Solve $5p + 7 = 3(4 – p)$

$p =$ .....

(3)

(Total 7 marks)

3. A plane flies 1400 kilometres in 2 hours 20 minutes.

Calculate the average speed, in km/h, of the plane.

..... km/h

(Total 3 marks)

4. (a) Work out the value of $3p + 4q$ when $p = 5$ and $q = -2$

……

(2)

(b) Given that $y = 4x - 3$, work out the value of x when $y = 11$

x = ……

(3)

(c) Multiply out $7(n - 3)$

……

(1)

(Total 6 marks)

5. Ben bought a car for £12 000.

Each year the value of the car depreciated by 10%.

Work out the value of the car two years after he bought it.

£ .....

(Total 3 marks)

6.

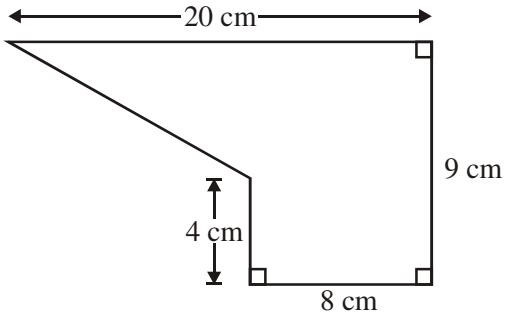


Diagram **NOT** accurately drawn

The diagram shows a shape.
Work out the area of the shape.

..... cm^2

(Total 4 marks)

7. Jade made a train journey.

Her train should have arrived at 14 40

It arrived 1 hour 50 minutes late.

(a) At what time did her train arrive?

……..

(1)

The railway company gave Jade some money back, because her train was late.

The company used this rule to work out the amount of money.

Find $\frac{1}{4}$ of the ticket price
Then round **up** this answer to the next whole number of pounds

Jade's ticket price was £33.56

(b) (i) Work out $\frac{1}{4}$ of £33.56

£……

(ii) Round up your answer to part (i) to the next whole number of pounds.

£……

(3)

(Total 4 marks)

8.

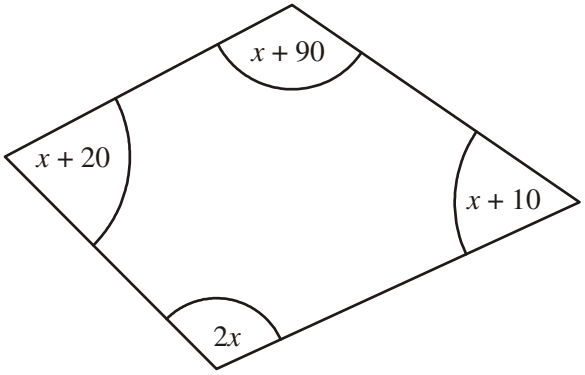


Diagram **NOT** accurately drawn

The sizes of the angles, in degrees, of the quadrilateral are

$x + 10$
$2x$
$x + 90$
$x + 20$

(a) Use this information to write down an equation in terms of x.

.....

(2)

(b) Use your answer to part (a) to work out the size of the smallest angle of the quadrilateral.

..... °

(3)

(Total 5 marks)

9. This table is used to find numbers of rolls of insulation material needed for lofts of different floor areas.

Floor area of loft (A square feet)	Number of rolls (n)
300	6
350	7
400	8
450	9
500	10
550	11

The floor of a rectangular loft is 30 feet long and 15 feet wide.

(a) (i) Work out the floor area of this loft.

…… square feet

(ii) Write down the number of rolls of insulation material needed for this loft.

……..……

(3)

n is the number of rolls of insulation material needed for a loft with a floor area of A square feet.

(b) Express n in terms of A.

n = ……

(2)

(Total 5 marks)

CALCULATORS ARE NOT ALLOWED IN SECTION B

FOLLOW THE INSTRUCTIONS OF THE INVIGILATOR AND PUT YOUR CALCULATOR OUT OF REACH

Section B - Calculators are not permitted

10. Work out £1.70 × 5

£ .....

(Total 1 mark)

11. (a) Work out the value of

(i) 4^2

.....

(ii) $\sqrt{64}$

.....

(iii) 3×2^3

.....

(3)

(b) Work out

(i) – 2 + 5

.....

(ii) – 2 – 3

.....

(2)

(Total 5 marks)

12. Work out an **estimate** for the value of 5.1×98. You must show all your working.

.....

(Total 2 marks)

13. Peter rolled a 6-sided dice ten times.
Here are his scores.

3 2 4 6 3 3 4 2 5 4

(a) Work out the median of his scores.

.....

(1)

(b) Work out the mean of his scores.

.....

(2)

(c) Work out the range of his scores.

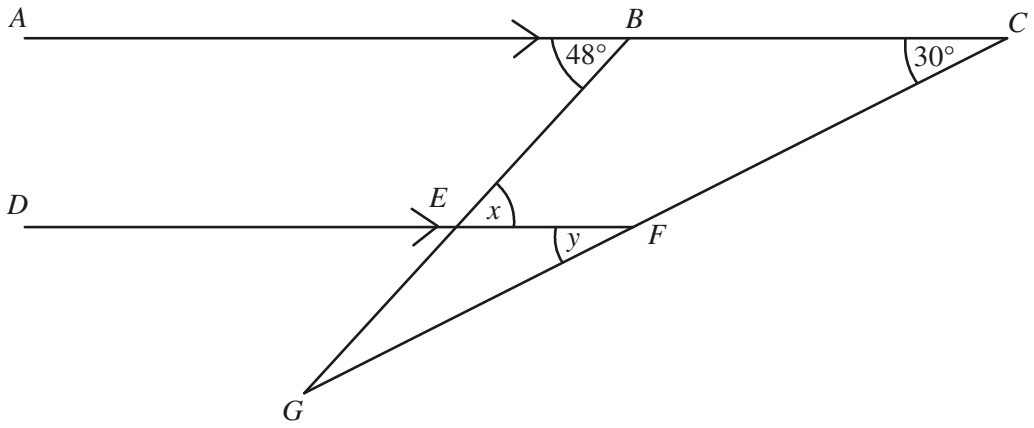
.....

(1)

(Total 4 marks)

14.

Diagram **NOT** accurately drawn



BEG and *CFG* are straight lines.
ABC is parallel to *DEF*.
Angle *ABE* = 48°.
Angle *BCF* = 30°.

(a) (i) Write down the size of the angle marked *x*.

x = ...°

(ii) Give a reason for your answer.

.....
.

(2)

(b) (i) Write down the size of the angle marked *y*.

y = ...°

(ii) Give a reason for your answer.

.....
.

(2)
(Total 4 marks)

15. A school snack bar offers a choice of four snacks.
The four snacks are burgers, pizza, pasta and salad.
Students can choose **one** of these four snacks.

The table shows the probability that a student will choose burger or pizza or salad.

Snack	burger	pizza	pasta	salad
Probability	0.35	0.15		0.2

One student is chosen at random from the students who use the snack bar.

(a) Work out the probability that the student

(i) did **not** choose salad,

.....

(ii) chose pasta.

.....

(3)

300 students used the snack bar on Tuesday.

(b) Work out an estimate for the number of students who chose pizza.

.....

(2)

(Total 5 marks)

16. (a) Work out $\frac{2}{5}+\frac{3}{8}$

……

(2)

(b) Work out $5\frac{2}{3}-2\frac{3}{4}$

……

(3)

(Total 5 marks)

17. (a) Simplify fully $4a + 5b - 2a + b$

.....

(1)

(b) Factorise $x^2 - 6x$

.....

(1)

(c) Expand $x(3 - 2x^2)$

.....

(2)

(d) Factorise completely $12xy + 4x^2$

.....

(2)

(Total 6 marks)

18. Using the information that

$$4.8 \times 34 = 163.2$$

write down the value of

(a) 48×34

.....

(1)

(b) 4.8×3.4

.....

(1)

(c) $163.2 \div 48$

.....

(1)

(Total 3 marks)

19. A customer who cancels a holiday with Funtours has to pay a cancellation charge.
The cancellation charge depends on the number of days before the departure date the customer cancels the holiday.
The cancellation charge is a percentage of the cost of the holiday.
The table shows the percentages.

Number of days before the departure date the customer cancels the holiday	Percentage of the cost of the holiday
29–55	40%
22–28	60%
15–21	80%
4–14	90%
3 or less	100%

The cost of Amy's holiday was £840.
She cancelled her holiday 25 days before the departure date.

(a) Work out the cancellation charge she had to pay.

£ .....

(2)

The cost of Carol's holiday was £600.
She cancelled her holiday and had to pay a cancellation charge of £480.

(b) Work out £480 as a percentage of £600.

..... %

(1)

Ravi cancelled his holiday 30 days before the departure date.
He had to pay a cancellation charge of £272.

(c) Work out the cost of his holiday.

£ ……

(2)

(Total 5 marks)