Pocklington School 13+ Mathematics 2024

Sample 1

1 Hour

Name	

- **Calculators are not allowed**

- **Write your answers in the spaces provided**

- **Show all working in the spaces provided**

Q1.

Calculate the following, showing a clear method where appropriate:

    a. $25 \div (2^2 + 6 - 5)$

....
(2)

    b. $34.5 + 1.89 + 300$

....
(2)

    c. 2.3×1.9

....
(2)

d. $44.5 \div 0.5$

....
(2)

e. $4^3 - 17$

....
(2)

f. $3836 \div 7$

....
(2)

(Total for question = 12 marks)

Q2.

Solve the following equations:

    a. $5y = 90$

$y = $ ....

    b. $\frac{q}{3} = 27$

$q = $ ....

    c. $4t - 9 = 63$

$t = $ ....

    d. $p^2 = 25$

$p = $ ....

e. $68 = 4(2x + 3)$

$x = $ ....
(3)

(Total for question = 8 marks)

Q3.

Calculate the following. You must show all your working out. Give your answers as mixed numbers in their simplest form.

a. $2\frac{1}{4} + 3\frac{1}{5}$

....
(3)

b. $\frac{3}{8} \times \frac{4}{27}$

....
(2)

(Total for question = 5 marks)

Q4.

Expand these brackets and simplify where possible:

a. $3(2x - 1)$

....
(2)

b. $3(2x + 1) + 4(x + 2)$

....
(3)

(Total for question = 5 marks)

Q5.

Put these numbers in order from smallest to largest:

13.43   13.043   13.403   13.4   13.34

....

(Total for question = 2 marks)

Q6.

Write down the next 3 terms in each of these sequences:

a. 2, 9, 16, 23, 30, ..., ..., ...

b. -1, -5, -9, -13, -17, ..., ..., ...

c. 1, 4, 8, 16, 32, ..., ..., ...

d. 8.2, 8.6, 9.0, 9.4, 9.8, ..., ..., ...

(Total for question = 4 marks)

Q7.

A car is travelling for 3 hours and it travels 180 miles. What is the car's average speed?

.... miles per hour

(Total for question = 4 marks)

Q8.

There are 120 pupils in year 8 in Daventry High School.

95% of these pupils go out of school on a Geography field trip.

How many pupils are left at school?

.... pupils

(Total for question = 4 marks)

Q9.

Find the missing angles from the diagrams below:
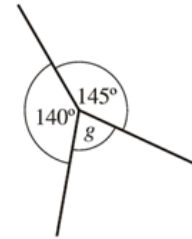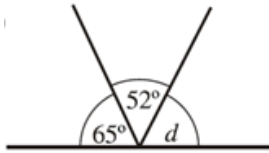
Angle d = ...
(1)

Angle e = ...
(1)

Angle f = ...
(1)

Angle g = ...
(1)

(Total for question = 4 marks)

Q10.

In a class of 30 children the boys and girls are in the ratio 3:2.
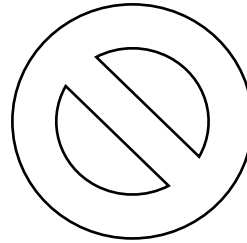
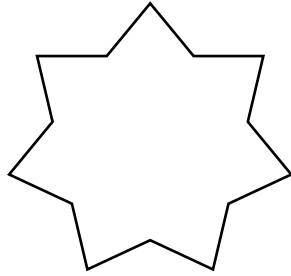Calculate how many boys and girls there are.

There are .... boys
(1)

There are .... girls
(1)

(Total for question = 2 marks)

Q11.

Look at the shapes below and draw on any lines of symmetry with a ruler.

(Total for question = 3 marks)

Q12.

Write these fractions as decimals:

a. $\dfrac{80}{200}$

....
(1)

b. $\dfrac{38}{50}$

....
(1)

(Total for question = 2 marks)

Q13.

Lauren gets up in the morning at 6:30am.

It takes her 10 minutes to get dressed.

It takes her 20 minutes to eat breakfast.

She watches TV for 10 minutes.

She sets off for school in the car and the journey takes 50 minutes.

Once at school she goes into 'before school club' for 30 minutes then she goes to school.

What time does she get into school?

.... am

(Total for question = 2 marks)

Q14.

A large bar of chocolate has 80 squares.

a. Penny gives 25% of the bar of chocolate to Fred. How many squares does Fred get?

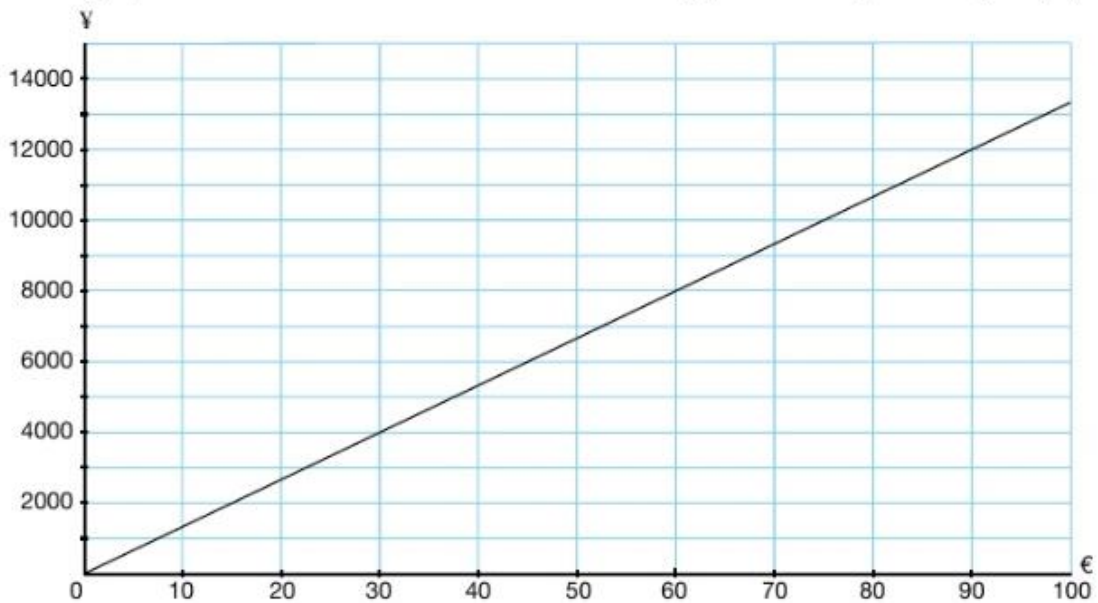................................ squares

(1)

b.   Out of the **remaining squares**, Penny gives 40% to Charlotte.

How many squares of chocolate does Penny keep for herself?

.... squares

(2)

(Total for question = 3 marks)

Q15.

The graph shows the conversion from euros (€) to the Japanese yen (¥).

a.   Covert €90 to Yen.

.... Yen

(1)

b.   Convert ¥8000 to Euros.

.... Euros

(1)

c.   A shop in Japan says it will accept Euros. Adam pays with a €100 note for a camera costing ¥6000. How may Yen should he receive in change?
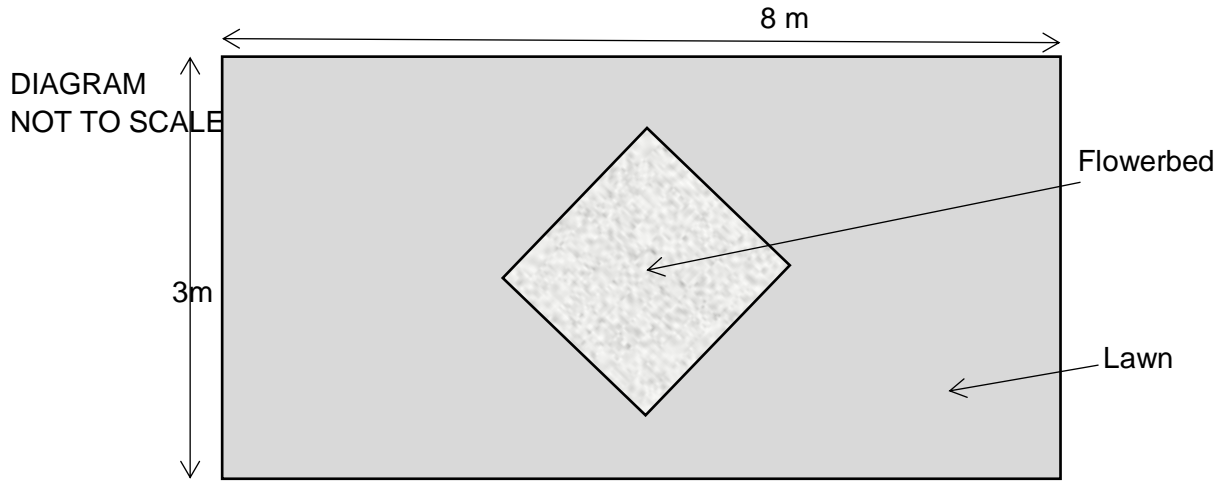
.... Yen

(3)

(Total for question = 5 marks)

Q16.

Here is a diagram of a flowerbed, which is in the middle of a lawn in a garden.

The flowerbed is a square, measuring 2m by 2m.

a. The gardener has to mow the lawn. What is the area of the lawn?

.... m^2

(3)

b. The gardener has to trim all the way around the edge of the entire lawn with a strimmer.

What is the length of the entire perimeter of the lawn edges that he has to trim?

.... m

(3)

(Total for question = 6 marks)

Q17.

Calculate answers to the following expressions, when $a = 3$, $b = -2$ and $c = 5$.

   a. $3ba + c^2$

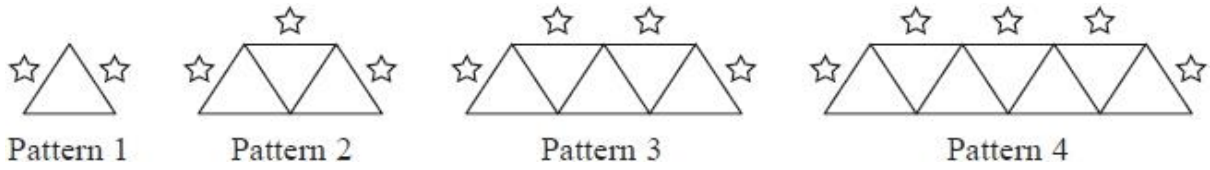...
(3)

   b. $(c + b)^3$

....
(2)

   c. $\dfrac{a^2}{3} + 5c$

....
(2)

(Total for question = 7 marks)

Q18.

Here is a sequence of patterns made from triangles and stars.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

(a) How many stars are needed for Pattern 5?

....

(1)

(b) How many triangles are needed for Pattern 6?

....

(1)

A pattern in the sequence is made from exactly 10 stars.

(c) How many triangles are needed for this pattern?

....

(2)

(Total for question = 4 marks)

Q19.

You can use this graph to change between pounds (£) and dollars ($).
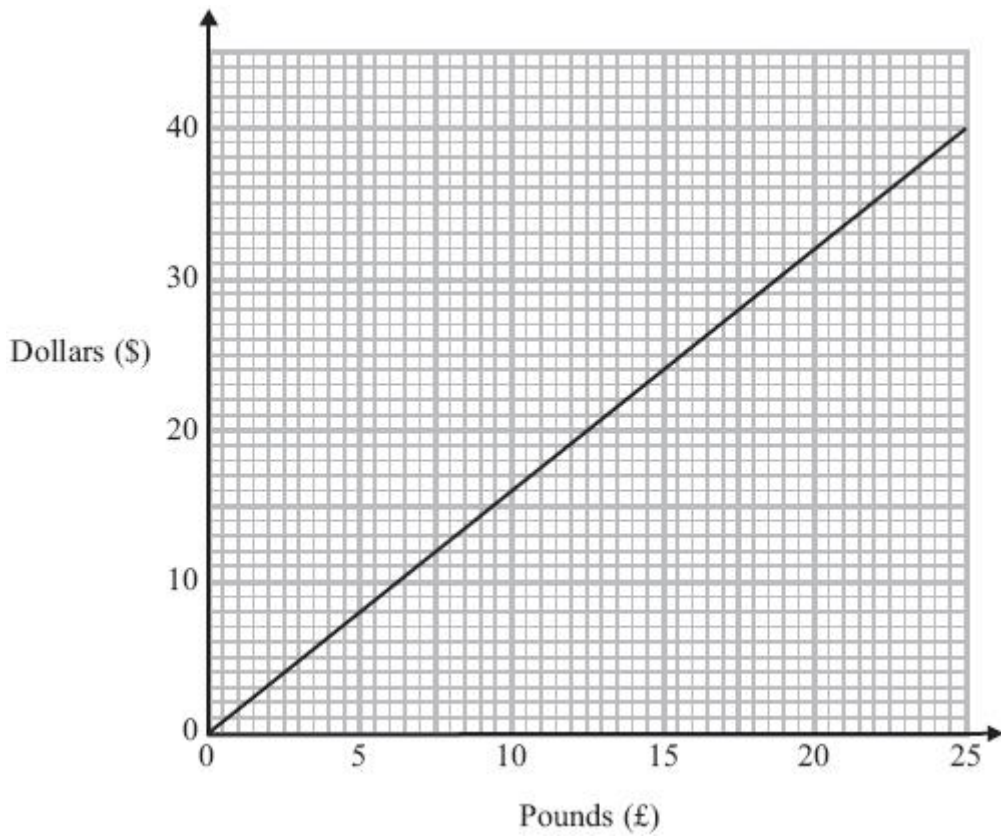
(a) Change £20 into dollars ($).

....

....

(1)

In London, Sano headphones cost £60
In New York, Sano headphones cost $100

Sano headphones cost more in New York than in London.

(b) How much more?

....
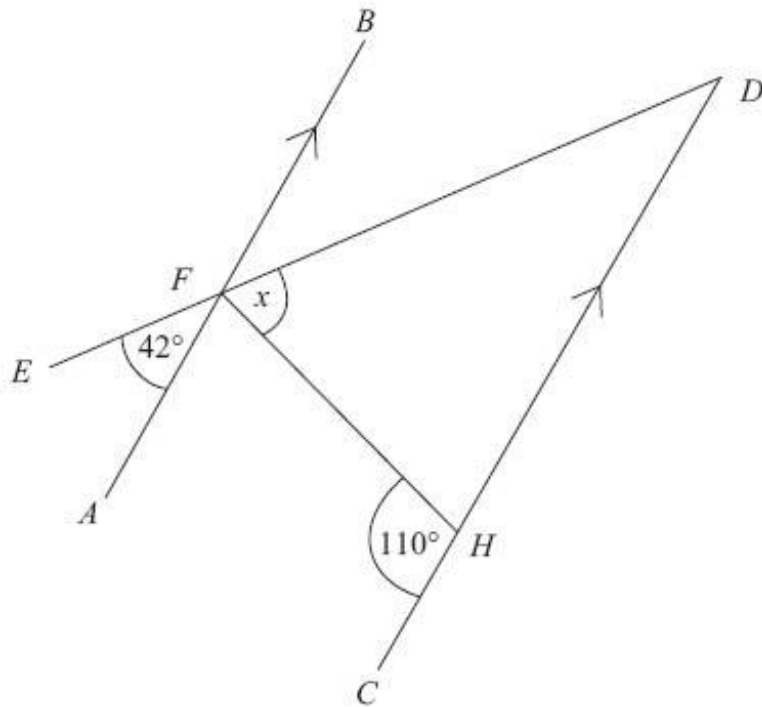
(3)

(Total for question = 6 marks)

Q20.

Diagram **NOT** accurately drawn

AFB and *CHD* are parallel lines.
EFD is a straight line.

Work out the size of the angle marked *x*.

x = ... $^\circ$
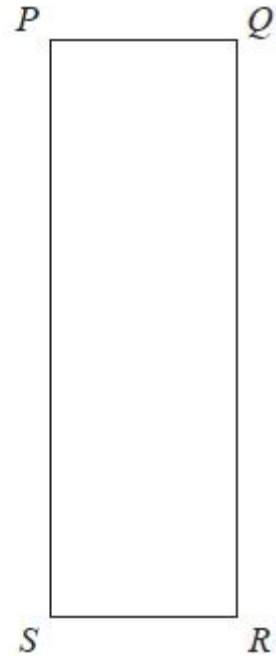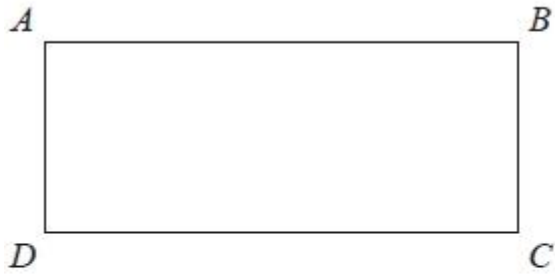
(3)

Q21.

Write down the ratio of 450 grams to 15 grams.
Give your answer in its simplest form.

....

(2)

(Total for question = 6 marks)

Q22.

Here are two rectangles.

QR = 10 cm
BC = *PQ*

The perimeter of *ABCD* is 26 cm
The area of *PQRS* is 45 cm^2

Find the length of *AB*.

.... cm

(Total for question = 4 marks)

Q23.

Write down all the factors of 30

....
(2)

Q24.

Work out 2^3

....
(1)

(Total for question = 3 marks)

END OF QUESTIONS (100 MARKS)