Kent College

13+ MATHEMATICS PAPER
- SAMPLE -

Time Allowed:	**1 HOUR 30 MINUTES**
Equipment Required:	Ruler, pencil, pen and protractor
Special Instructions:	You may also use tracing paper which will be provided. All questions should be attempted. You must show all your working out as marks will be awarded for methods. You **must not** use a calculator. Write all your answers in the spaces provided.

Name:
Result:
Comment:

1. Work out 30% of £45.

Answer: £ ……

2. Write down the value of

i 3^4

Answer: ……

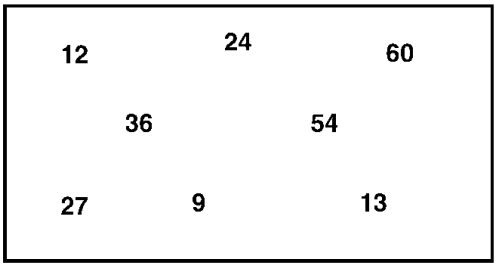
ii $\sqrt{81}$

Answer: ……

3. The temperature in Moscow was –3 °C.
The temperature in Barcelona was 17 °C higher than the temperature in Moscow.
Work out the temperature in Barcelona.

Answer: ……°C

4. From the numbers in the rectangle



write down **all** of the:

i square numbers,

Answer: ……

ii numbers that are factors of 72,

Answer: ……

iii numbers that are multiples of 9,

Answer: ……

iv prime numbers.

Answer: ……

5. Miss Phillips is organising a trip to London to see the musical "Chitty Chitty Bang Bang".
195 people decide to go on the trip.
For every 16 tickets that she pays for Miss Phillips is given a free seat.

i Work out how many free seats Miss Phillips will be allowed.

Answer: ……seats

Miss Phillips charges **each person** £27 to cover the cost of the tickets and the coach fare.
ii Work out the amount of money that should be collected.

Answer: £…….

The total cost of the trip was £5078.
iii Work out the profit that Miss Phillips will make on the trip.

Answer: £…….

6. Mr. Singh shared £32 between his two children in the ratio of their ages.
Narinder is 5 years old and her brother is 3 years old.
Work out how much money Narinder received from her father.

Answer: £…….

7.

2.5	40%	$\frac{5}{2}$	$\frac{4}{10}$	0.4	$\frac{5}{12}$	$\frac{16}{40}$

Tick each box that contains a number equivalent to the fraction $\frac{2}{5}$.

8. Cedric buys 12 pencils for £3.48.

Work out the cost of 20 pencils.

Answer: £……

9. Work out $\frac{5}{8}$ of £9.60

Answer: £……

10. **a** Write in the missing numbers in the following sequence.

2, 5, 8, 11, 14, ..., ..., 23,

b Work out the 12th number in the sequence.

Answer: ……

c Work out an algebraic expression for the n^{th} term in the sequence.

Answer: ……

11. Simplify

i $2x + 3x$

Answer: ……

ii $h \times h \times h \times h \times h$

Answer: ……

iii $2m \times 3n$

Answer: ……

12. Expand the brackets and simplify

i $2(x + 3) + 5(x - 3)$

Answer: ……

ii $3(2y + 5) – 7(3y – 4)$

Answer: ……

iii $(x + 6)(x + 8)$

Answer: ……

13. Factorise completely

i $18c + 24d$

Answer: ……

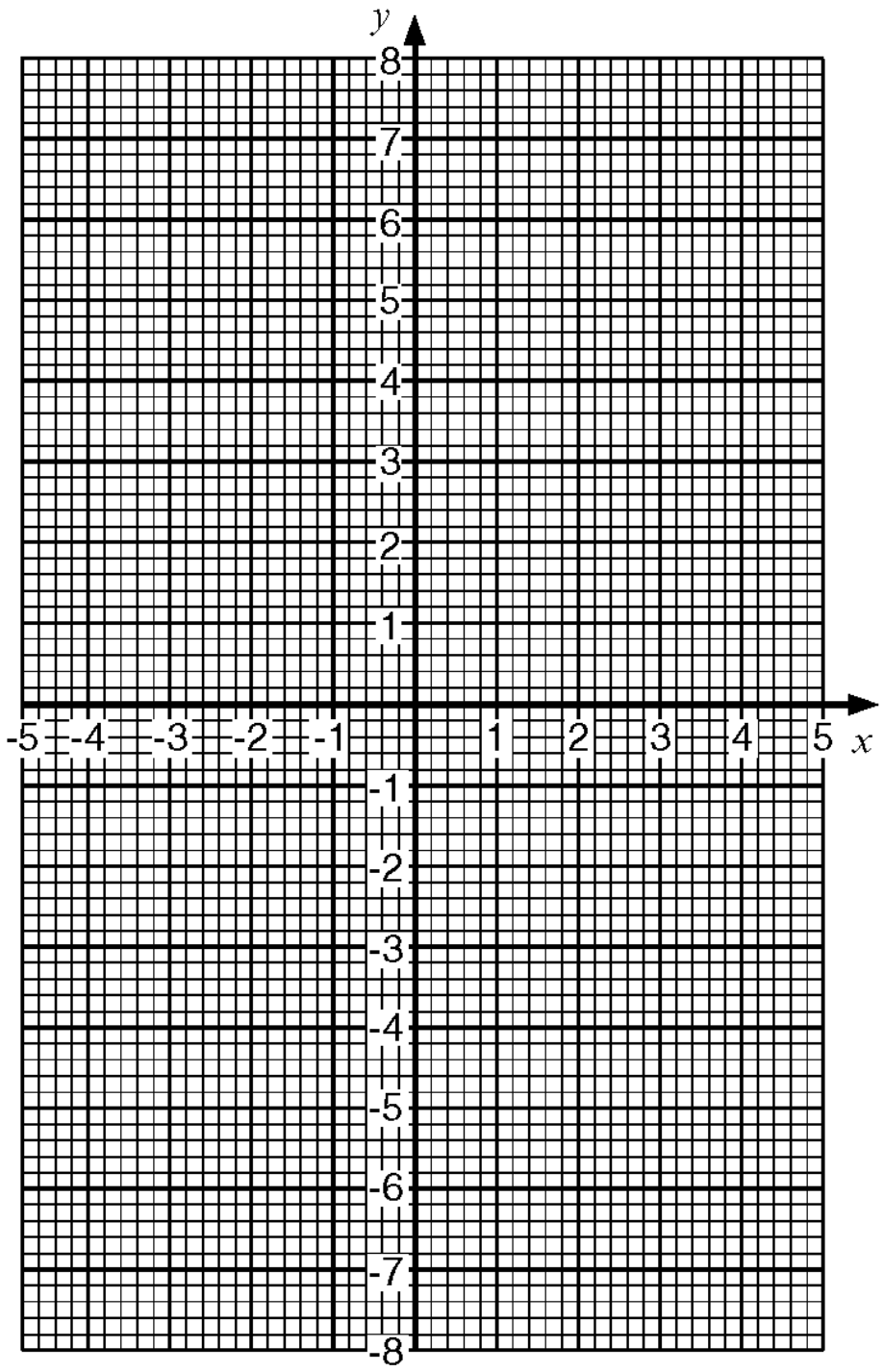
ii $16x^2 – 20x$

Answer: ……

14. **a** Complete this table of values for $y = 3x - 1$.

x	-2	-1	0	1	2	3
y			-1			8

b Draw the graph of $y = 3x - 1$ on the grid below.



15. Solve the equations

a $3y + 7 = 28$

Answer: ……

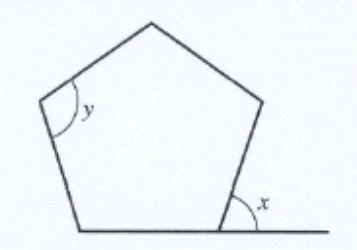
b $2(3p + 2) = 19$

Answer: ……

c $6r - 5 = 7 - 2r$

Answer: ……

16. The diagram shows a regular pentagon.



Work out the size of:

a the angle marked *x*

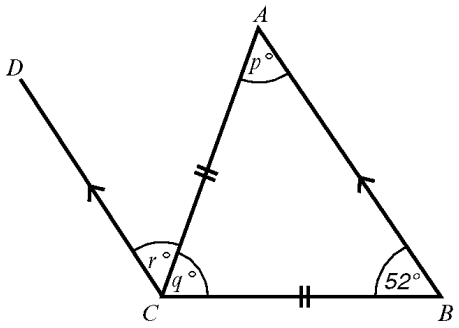
Answer: ……°

b the angle marked *y*

Answer: ……°

17.

Diagram **NOT** accurately drawn



AC = *BC*
AB is parallel to *DC*
Angle *ABC* = 52º

a Work out the value of

i *p*

Answer: ……°

ii *q*

Answer: ……°

The angles marked p^o and r^o are equal.

b What geometrical name is given to this type of equal angles?

Answer: ……

18. **i** How many metres are there in 36 kilometres?

Answer: ……m

ii Write 36 km/h as a speed in metre per second.

Answer: ……..m/s

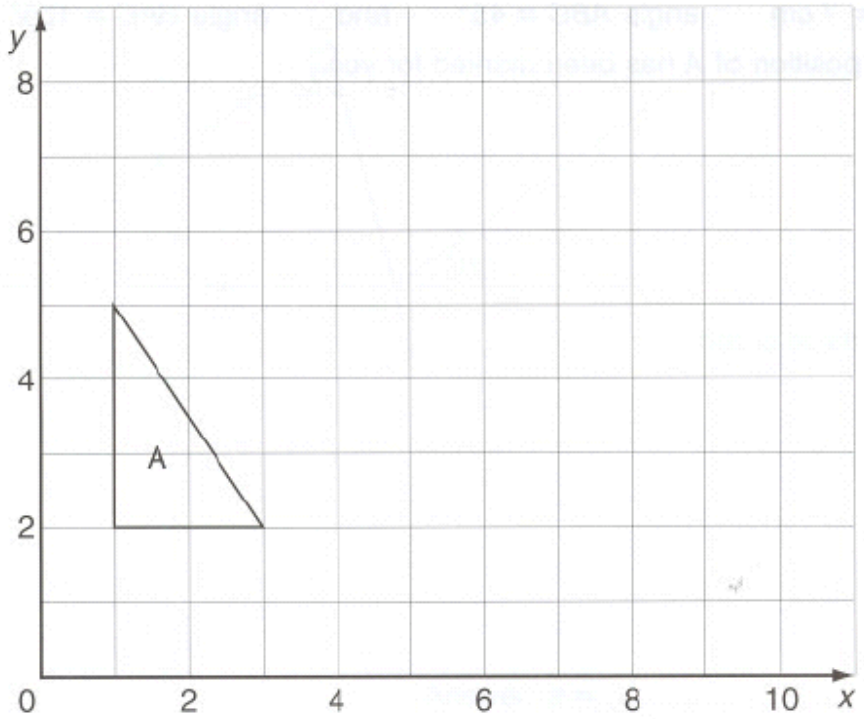
19. Construct triangle *ABC*, given that
AB = 7 cm angle *ABC* = 45° and angle BAC = 105°.
The position of *A* has been marked for you.
Label vertices B and C clearly.

A

20. A train travelled 200 km in 2 hours and 30 minutes.
The train travelled at a constant speed.
Work out the constant speed of the train in km per hour.

Answer: ……km/h

21.



On the grid

i (a) draw the line $x = 5$

(b) reflect the triangle A in $x = 5$ and label the image B

ii rotate triangle A through 90° anticlockwise about (1, 5) and label the image C

iii translate triangle A by 5 units to the right and 3 units up and label the image D.

22. A packet contains only yellow counters and green counters.
There are 8 yellow counters and 5 green counters.
A counter is to be taken from the packet at random.

a Write down the probability that

i a yellow counter will be taken,

Answer: ……

ii a yellow counter will **not** be taken.

Answer: ……

A second counter is to be taken from the packet.

b Write down all the possible outcomes of taking two counters from the packet.

Answer: ……

23. The probability of a new DVD player being faulty is 0.003.
Work out the probability of a new DVD player **not** being faulty.

Answer: ……

24. Work out the mean of the numbers 7, 3, 5, 3, 2.

Answer: ……

25. Here is an extract from a TV programme guide.

Time	BBC1	Time	ITV
5.20pm	Blue Peter	5.20pm	Motor Sport
5.35pm	Neighbours	5.40pm	Best Friends
5.50pm	BBC News	6.30pm	ITV New & Weather
6.35pm	BBC Newsline & Weather	7.00pm	Emmerdale
7.05pm	A Question of Sport	7.55pm	Coronation Street
7.45pm	Top of the Pops	8.10pm	Tonight with Trevor McDonald
8.05pm	Eastenders		
9.40pm	Little Britain	9.05pm	A Touch of Frost

a At what time does A Question of Sport start?

Answer: ……

b How long is the Best Friends programme?

Answer: ……

Hannah wishes to record Eastenders. She uses a new 3 hour tape to record the programme.
c How much time will be left on the video tape after she has recorded Eastenders? Give your answer in minutes.

Answer: ……minutes

End of test – Total marks: 100