



# ALDENHAM SCHOOL

## 13 + Entrance Paper

January 2010

### Mathematics

Length of Examination – one hour

**Do not open until you are told to do so**

Surname: ..... School:.....

First name: ..... Age: Years ..... Months .....

#### INSTRUCTIONS FOR CANDIDATES

- Write your answers in the spaces provided in this booklet
- Show sufficient method to show how you obtained your answers
- Calculators **MUST NOT** be used in any question.
- Drawing instruments may be used.

Work steadily through the paper doing as much as you can straight away. Then go back to work at the more difficult questions. Make sure you have attempted to answer all the questions. There are 34 questions on this paper.

1. Work out  $7.3 + 3.66$

.....[2]

2. Work out  $5.78 - 3.85$

.....[2]

3. Work out  $5.34 \times 4$

.....[2]

4. Work out  $10.44 \div .3$

.....[2]

5. Write 0.8 as a percentage.

..... %[1]

6. Write  $\frac{23}{25}$  as a decimal.

.....[2]

7. Calculate  $\frac{2}{3} + \frac{3}{4}$  and give your answer as a mixed fraction.

.....[3]

8. Calculate  $\frac{2}{5} \times \frac{1}{4}$ , giving your answer in its simplest form.

..... [2]

9. Find the Highest Common Factor of 18 and 24

.....[3]

10. Work out the following

(a)  $-7+3$  .....

(b)  $3 - (-4)$  .....

(c)  $-3 \times 12$  .....

(d)  $-36 \div 4$  .....

[4]

11. Given that  $1.4 \times 32 = 44.8$ , write down the value of  $14 \times 320$

.....[2]

12. Calculate 15% of 76 kg

.....kg[3]

13. Put the following decimals in order of size, smallest first:

0.263, 0.259, 0.26, 0.3

.....[3]

14. Aldenham Hockey Club have won, drawn and lost their matches this season in the ratio 3:2:1. They have played 24 matches. How many games have they not won?

.....[3]

15. Evaluate  $3^2 - 5$

.....[2]

16. Simplify as far as possible:  $10d + 8 - 4d - 4e - 7 - e$

.....[3]

17. Simplify as far as possible:  $3g \times 3f \times 4t$

.....[2]

18. Expand the bracket  $4(3x + 5)$ .

.....[2]

19. Find the value of  $3x^2 + 3x - 5$  when  $x = 2$ .

.....[2]

20. If  $p = 2$  and  $q = -3$ , calculate the value of  $2q - p$ .

.....[2]

21. Solve the equation  $26 - y = 5$ .

$y = \dots\dots\dots$ [1]

22. Solve the equation  $4x + 4 = 16$

$x = \dots\dots\dots$ [2]

23. Solve the equation  $5x - 3 = 27$

$x = \dots\dots\dots$ [2]

24. Solve the equation  $5x + 4 = 25 - 2x$ .

$x = \dots\dots\dots$ [2]

25. Write down the next two terms of the sequence 4, 5, 7, 10, 14,

.....[2]

26. My mobile telephone company charges £13.99 line rental a month and 10p per minute for calls.

(a) Using C to represent the cost of the bill and M to represent the number of minute spent on the telephone, write down a formula which connects C to M.

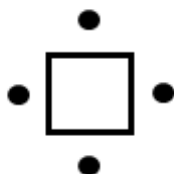
.....[2]

(b) Find the cost of my telephone bill if I spend 1hr 20 mins on the telephone

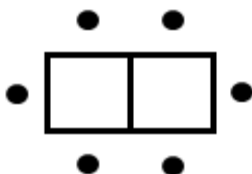
£.....[2]

[Total 4]

27. Each table in a restaurant seats 4 people:



Two tables can be joined in a line like this to seat 6 people:



(a) Sketch the plans for 3 tables joined in a line and 4 tables:

[2]

(b) Complete the table for your results:

<b>Number of tables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Number of people seated</b>	4			

[2]

(c) Calculate how many people can be seated at 10 tables joined together

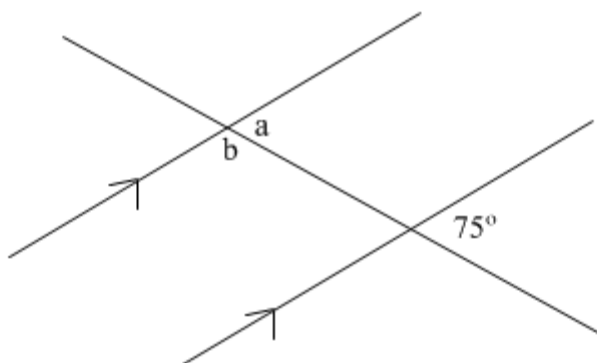
.....[1]

(d) A party of 30 people come to the restaurant. How many tables need to be joined together to seat them all?

.....[2]

[Total 7]

28. Calculate the size of the angles marked a and b.

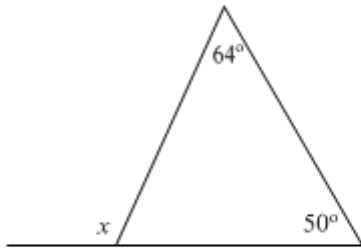


a= .....°

b= .....°

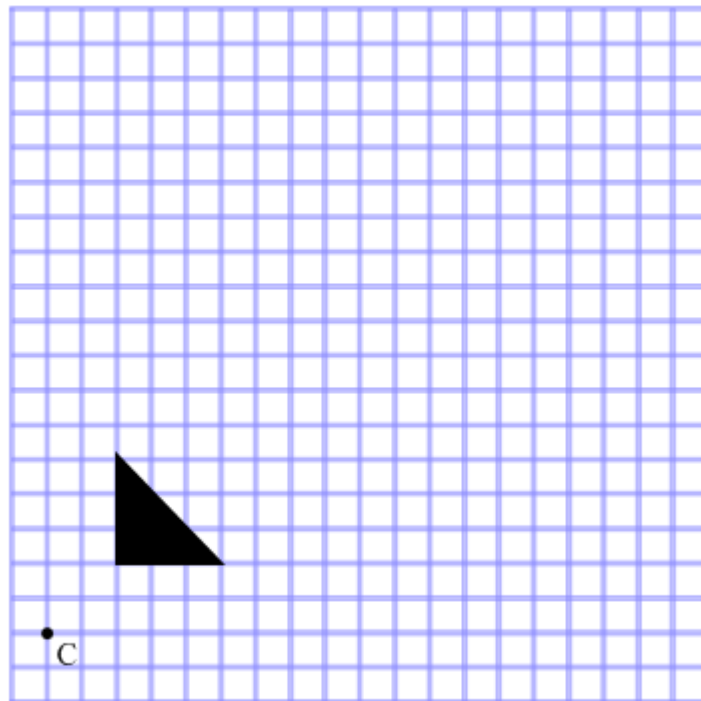
[2]

29. Calculate the size of the angle marked  $x$ .



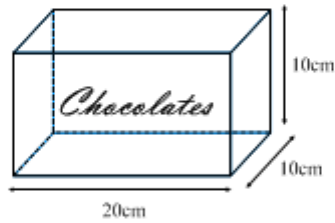
..... $^\circ$ [2]

30. On the grid below, draw an enlargement of the shape from centre of enlargement C, using a scale factor of 3



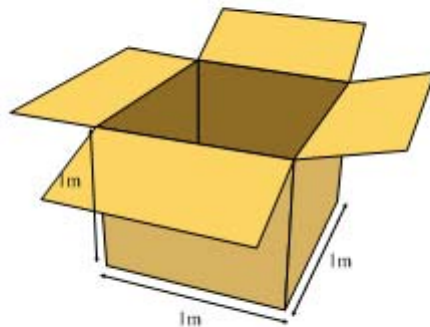
.....[3]

31. Calculate the volume of this box of chocolates using the correct units.



.....[2]

A manufacturer needs to pack the boxes of chocolates into this bigger box.

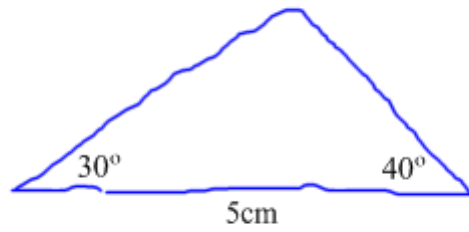


How many boxes of chocolates will fit into the bigger box?

.....boxes[3]

[Total 5]

32. Here is a sketch of a triangle. Make an accurate drawing of the triangle in the space provided below.



[3]

33. The six employees of Happy and Co. are paid the following salaries: £12 000, £12 000, £12 000, £12 000, £30 000 and £60 000.

Work out the mean, mode and median salary for Happy and Co.:

Mode = .....[1]

Median = .....[2]

Mean = .....[3]

Which average best represents the salaries of Happy and Co.? Give a reason for your answer.

[2]

[Total 8]

34. 40 pupils each each chose a drink and packet of crisps.

(a) Complete the table below showing the choice of each of the 40 pupils.

		Crisp flavour			Total
		Cheese and Onion	Plain	Salt and vinegar	
Drink flavour	Coke		7		24
	Orange juice	9			
	Total	21		8	

[4]

(b) What percentage of the pupils did not choose plain crisps?

.....%[3].

(c) Of the pupils who chose salt and vinegar, what percentage chose Coke to drink?

.....%[3]

[Total 9]

END

Total [100]