



# ALDENHAM SCHOOL

## 13 + Entrance Paper

### Sample Paper 2009

#### 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 48 questions on this paper.

1. Work out  $6.8 + 2.55 - 1.2$

.....[2]

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2. Work out  $25.27 \div 7$

.....[3]

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3. Add eight thousand and four to eighteen thousand and ninety-five.  
Give your answer as a number (not in words).

.....[3]

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4. Write  $8\frac{2}{9}$  as an improper fraction.

.....[2]

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5. Calculate 12% of £260

.....[3]

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6. Work out  $\frac{2}{7} + \frac{3}{5}$ .

.....[3]

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7. Showing all your workings, calculate  $36 \times 52$ .

.....[3]

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8. Calculate  $7 \times \frac{2}{5}$ , giving your answer as a mixed number.

.....[3]

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9. What percentage of £25 is £3.25?

.....% [3]

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10. A ship is anchored between two lighthouses L and H. The light from L shines on the ship every 30 seconds. The light from H shines on the ship every 40 seconds. Both lights start at the same moment. How often do the lights shine on the ship at once?

.....[3]

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11. Fill in the missing numbers in each of these statements:

$$- \square - 7 = - 21$$

$$13 - \square = 17$$

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12. Work out  $\frac{7}{9} \times \frac{3}{14}$ , giving your answer in its simplest form. [2]

.....[2]

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13. Samir needs 450g of butter to make 60 shortbread biscuits.  
How much will he use to make 12 biscuits?

.....g[3]

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14. Put the following fractions in order of size, smallest first:

$$\frac{2}{3}, \frac{5}{8}, \frac{7}{12}$$

.....[3]

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15. Given that  $19 \times 26 = 494$ , write down the value of  $1.9 \times 2600$ .

.....[2]

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16. At Christmas Darren, Nathan and Joe received Christmas cards in the ratio 4:4:5, respectively. They received 195 cards in total. How many did Joe receive?

.....[3]

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17. Simplify as far as possible:  $11d + 4 - 5d - 4e - 7 + e$

.....[2]

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18. Simplify as far as possible:  $2g \times 3f \times g \times 2f$

.....[1]

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19. Simplify as far as possible:  $4(x - 5)$ .

.....[1]

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20. Simplify as far as possible  $2x^2 + 2x - x$ .

.....[2]

---

21. Find the value of  $2x^2 + 3x + 4$  when  $x = 2$ .

.....[2]

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22. If  $p = 4$  and  $q = -2$ , calculate the value of  $4p + 3q$ .

.....[2]

---

23. Solve the equation  $13 - y = 8$ .

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

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24. Solve the equation  $5x + 4 = 34$

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

---

25. Solve the equation  $8x - 3 = 21$

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

---

26. Solve the equation  $\frac{3x}{2} = 6$ .

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

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27. Write down the next two terms of the sequence 2, 7, 17, 37

.....[2]

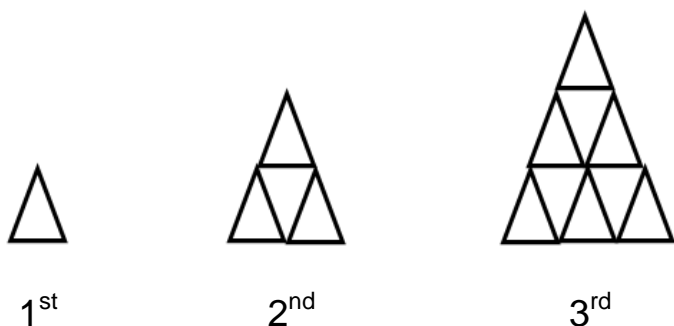
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28. My plumber charges a call-out fee of £50 plus £12.50 for every hour he has to work. How much would it cost for him to come out for three hours?

£.....[3]

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29. Bejal makes a pattern using triangles like this:



How many triangles will there be in the next shape?

.....

How many counters would there be in the 10th shape?

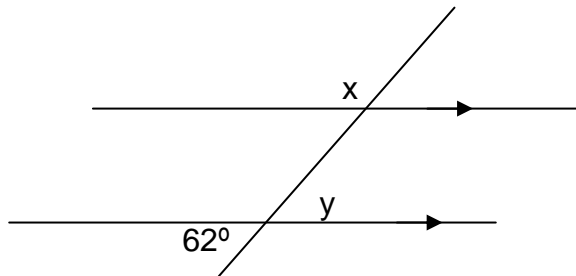
.....[3]

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30. James works out his pocket money in pence by multiplying his age by five and adding 50. Write a formula for the pocket money he receives, P, in pence when he is Y years old.

.....[2]

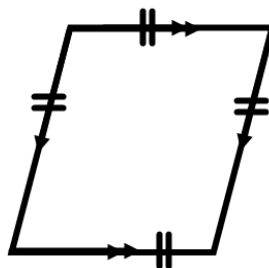
31. Calculate the size of the angles marked x and y.



x= .....

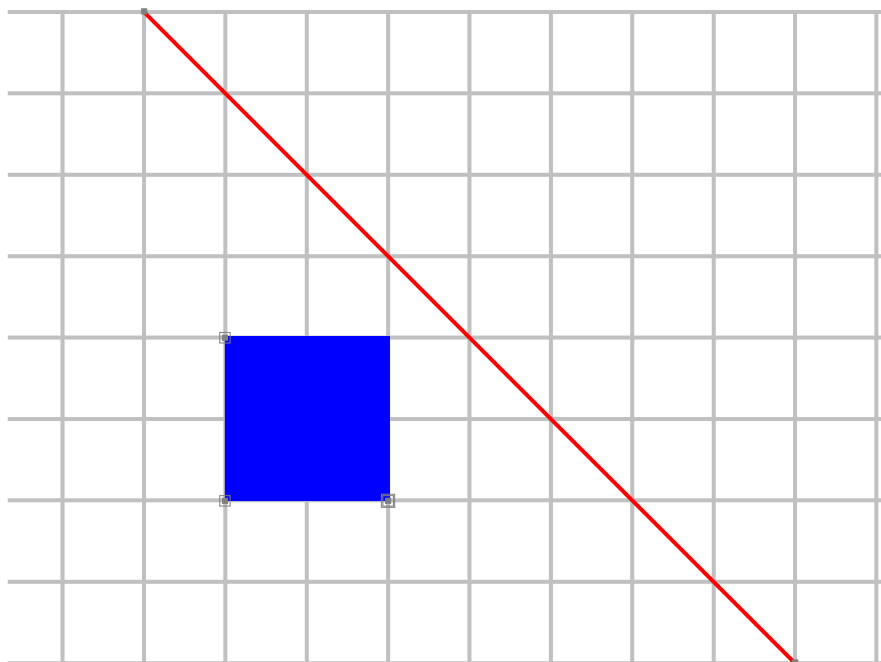
y= ..... [3]

32. Write down the name of this quadrilateral. Write down the reason for your answer.



.....  
 .....[2]

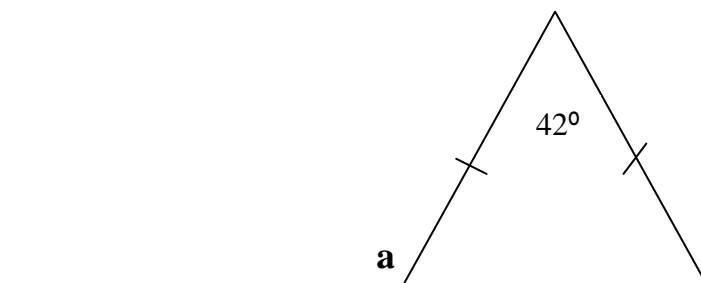
33. Reflect the shape in the mirror line.



[2]

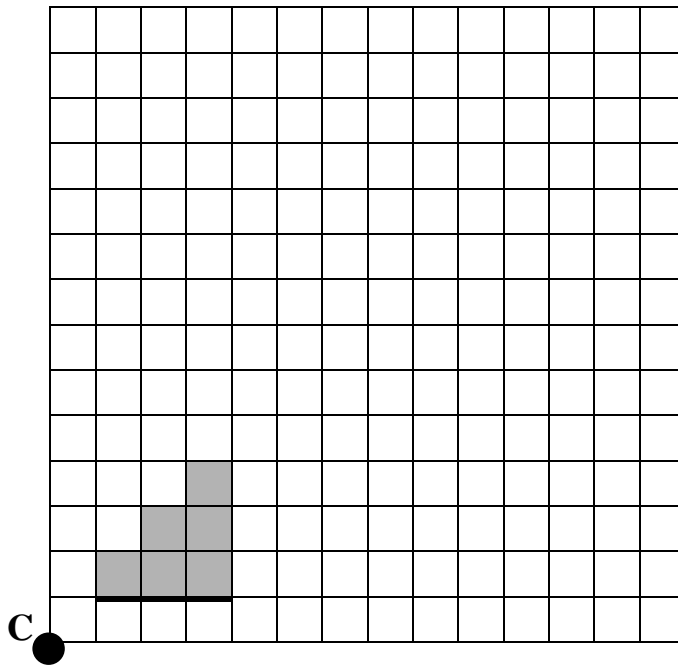
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34. Calculate the size of the angle marked a.



.....[3]

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



[3]

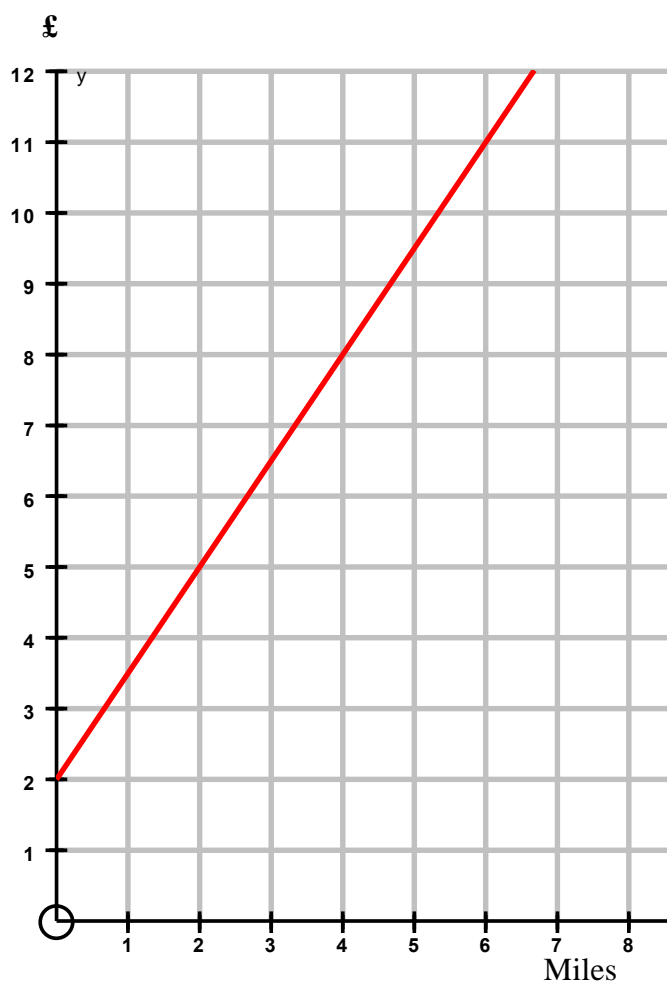
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36. What the coordinates of the point half-way between the points with coordinates (1,0) and (5,8) .

.....[2]

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37. This graph can be used to convert the distance (miles) travelled in a taxi to the fare payable (£). How much will the journey cost if you travel 5 miles?



£..... [2]

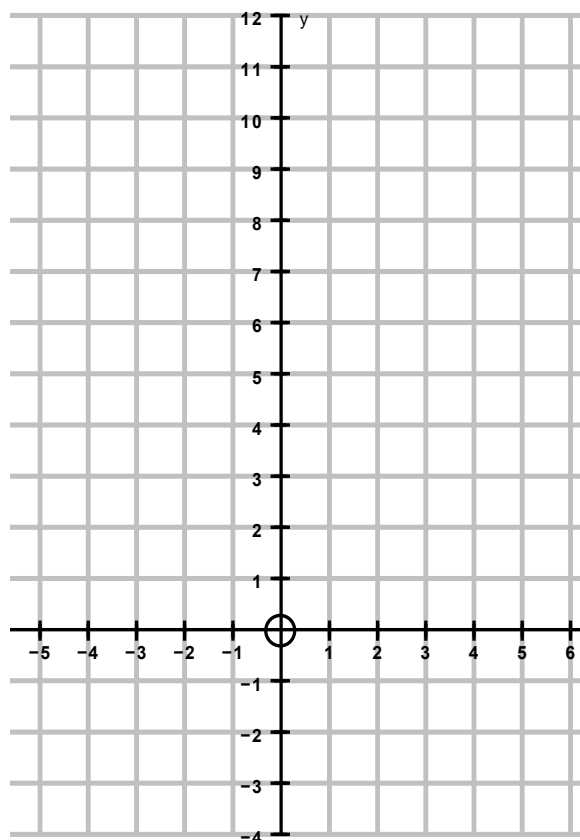
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38. Calculate what a speed of 8 metres per second is in kilometres per hour.

.....km/h [3]

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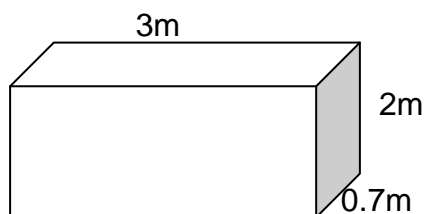
39. On the diagram below, draw the graph whose equation is  $y = \frac{1}{2}x - 2$ . Make sure you complete the table of values first.

x	-2	2	4
y			



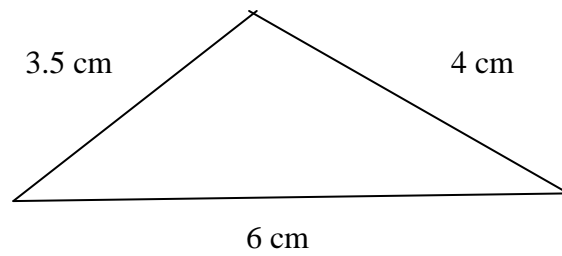
[3]

40. Calculate the volume of the cuboid shown in the diagram.



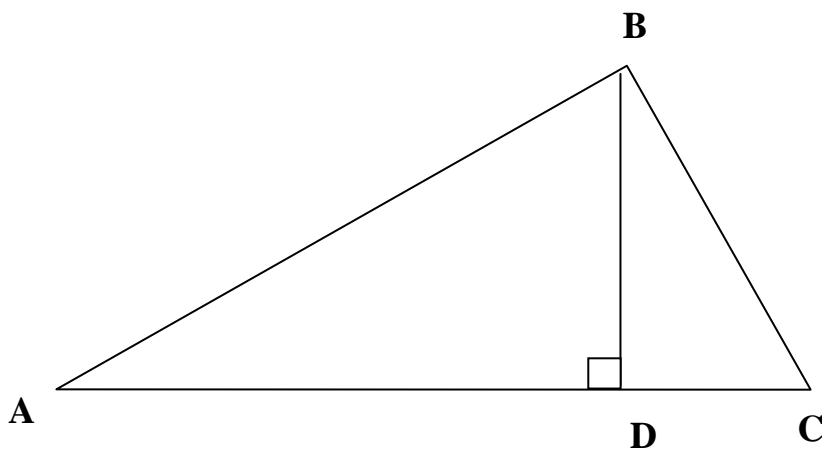
.....[3]

41. Here is a sketch of a triangle. Make an accurate drawing of the triangle.



[3]

- 
42. Measure the length of AC and BD to the nearest centimetre. Calculate the area of the triangle ABC.



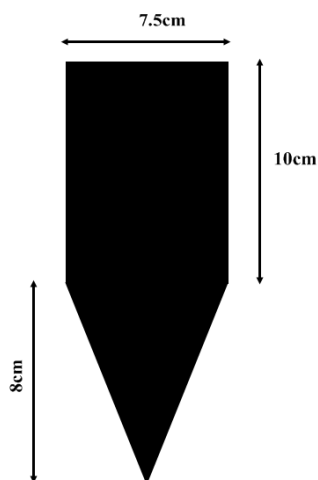
AC: .....cm

BD:.....cm

Area:.....cm<sup>2</sup>  
[4]

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43. Calculate the area of this shape.



.....cm<sup>2</sup> [3]

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44. The mean height of 8 pupils is 162 cm. A ninth pupil joins the group. His height is 171 cm. What is the new mean height of the group?

.....cm [2]

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45. These are the marks one of my classes gained in a test last week: 13, 26, 22, 30, 32, 48, 29, 27, 26, 32, 32.

What is the mode of these marks?

.....

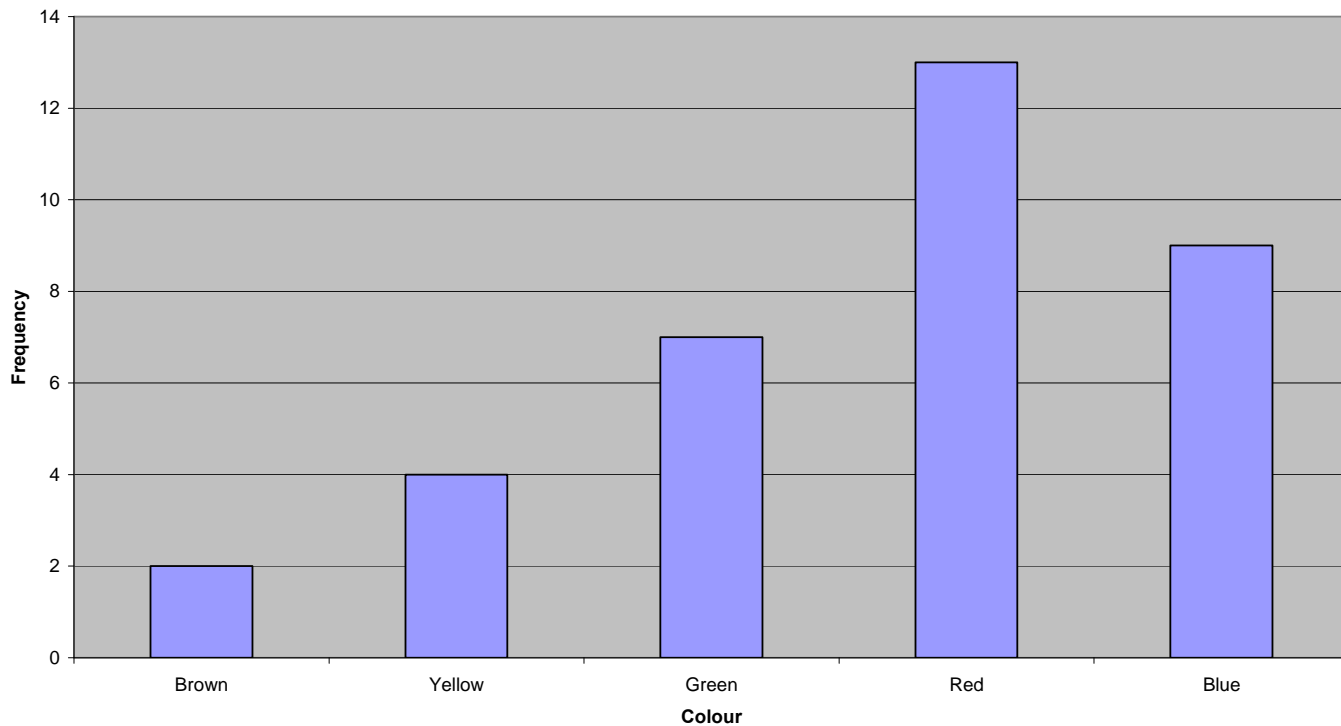
What is the median mark?

..... [3]

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46. The following bar chart shows the favourite colours of a class of pupils.

Favourite Colour

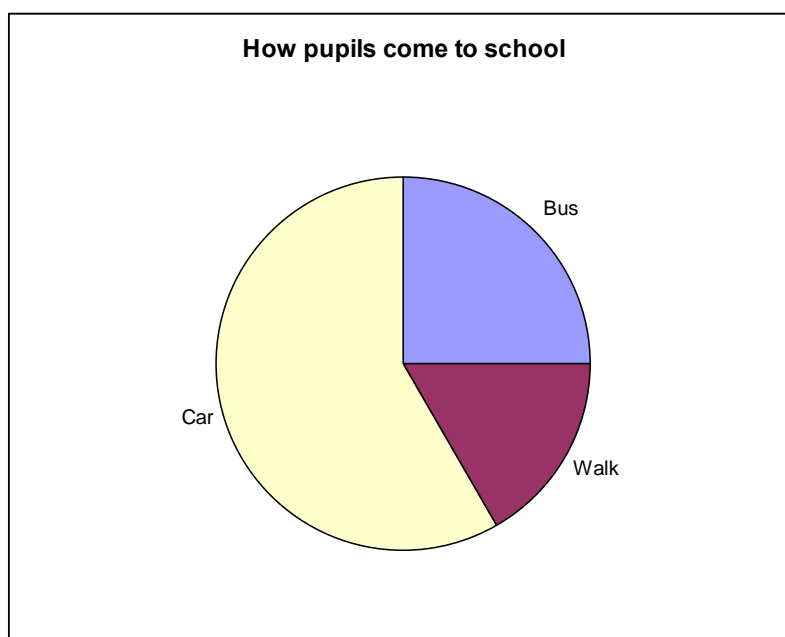


What fraction of the class prefer green?

.....[2]



47. This pie chart, which is an accurate drawing, shows how the pupils in my school get to school. If 40 pupils walk to school, how many pupils are there in my school?



.....pupils [3]

48. Two dice are rolled together. The scores on the dice are added together. Complete the table of possible outcomes below.

		Second Dice					
		1	2	3	4	5	6
First Dice	1						
	2	3					
	3						
	4						
	5			8			
	6						

How many different combinations are there? .....

What is the probability of getting more than 12? .....[4]

**END**

Total [120]