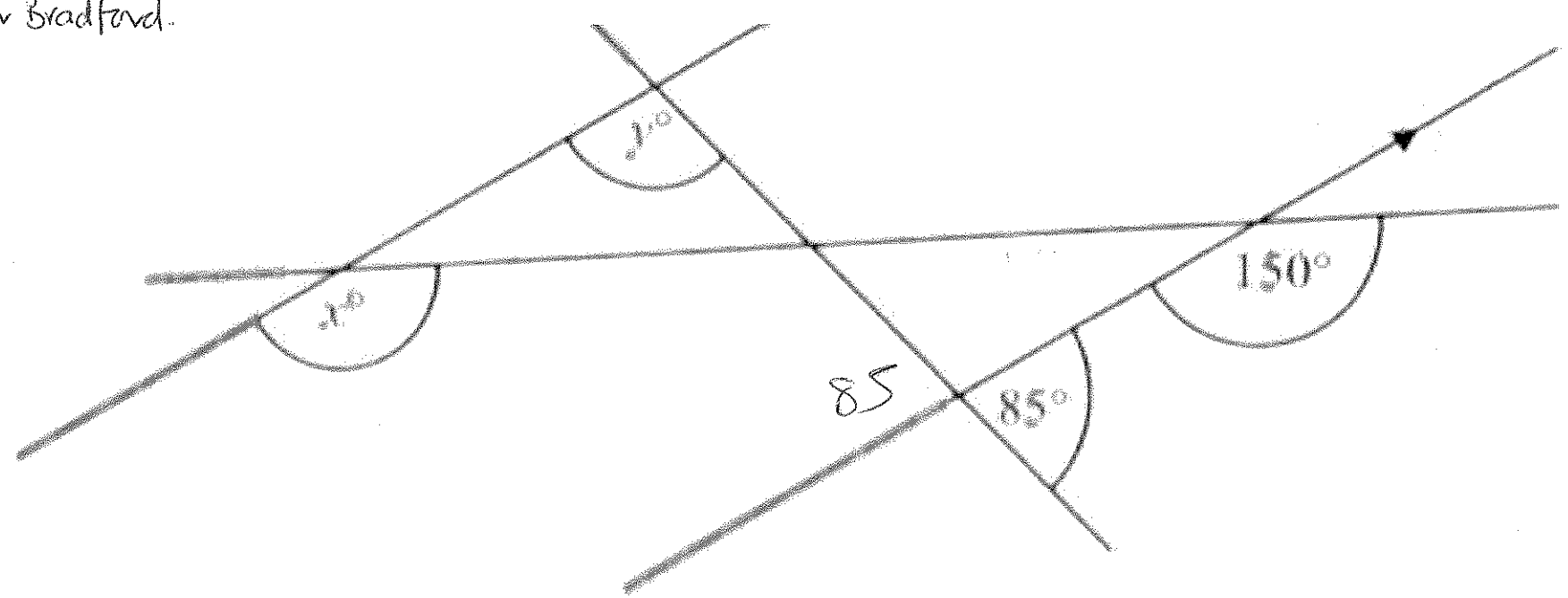


Please scan
& e-mail to Mr Bradford.
Thanks.



(a) Find the value of x .

150°

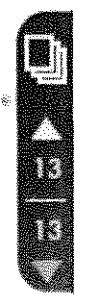
(1)

95° included.
85 + y = 180
↑

x corresponds to
150°

(b) Find the value of y .
Give reasons for your answer.

(1)



2. Use your calculator to work out

$$\frac{22.4 \times 14.5}{8.5 \times 3.2}$$

Write down all the figures on your calculator display.

enter your numbers using brackets

$$(22.4 \times 14.5) \div (8.5 \times 3.2) \\ = 11.94117647058$$

(2)

~~11.9~~

5. Sophie wants to find out the amount of time people exercise. She will use a questionnaire.

specify
time period

monthly
or
day
or

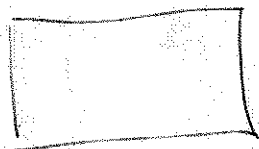
(a) Design a suitable question for Sophie to use in her questionnaire. You must include some response boxes.

how often do you exercise in a week?

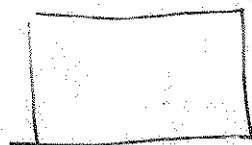
↑
importance



0-1



2-3



4+

← must have a +

↑
must have a 0

↑ make sure no overlaps

(2)

Sophie asks the people at her swimming pool to complete her questionnaire. This may **not** be a suitable sample.

(b) Give a reason why.

people at the pool exercise
other people may not

BIAS

(2)

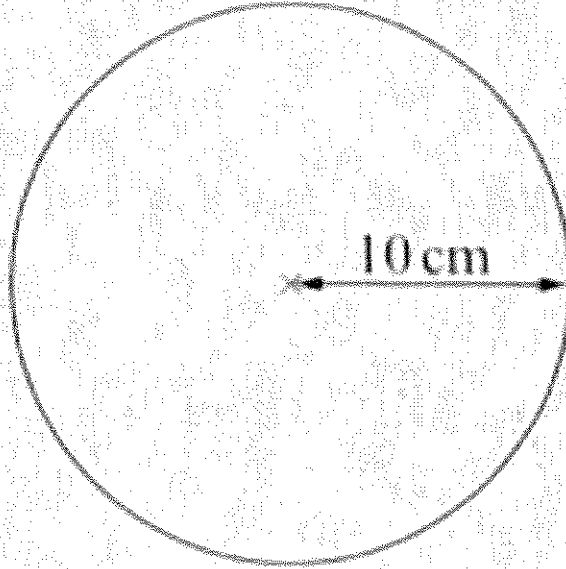


Diagram **NOT**
accurately drawn

The radius of a circle is 10 cm.

Work out the area of this circle.

Use $\pi = 3.14$

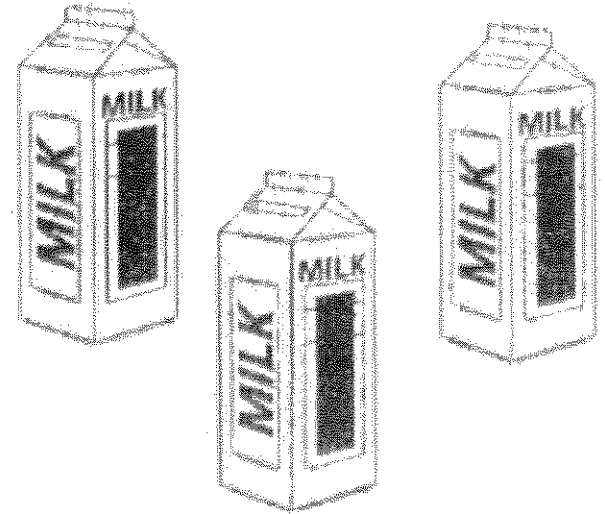
$$\begin{aligned} A &= \pi \times 10^2 \\ &= 3.14 \times 100 \\ &= 314 \text{ cm}^2 \end{aligned}$$

(3)

5. Michael buys 3 cartons of milk.

The total cost of these 3 cartons of milk is £4.20

Work out the total cost of 7 of these cartons of milk.



find the cost of 1

$$£4.20 \div 3 = £1.40$$

multiply £1.40 by 7 = £9.80

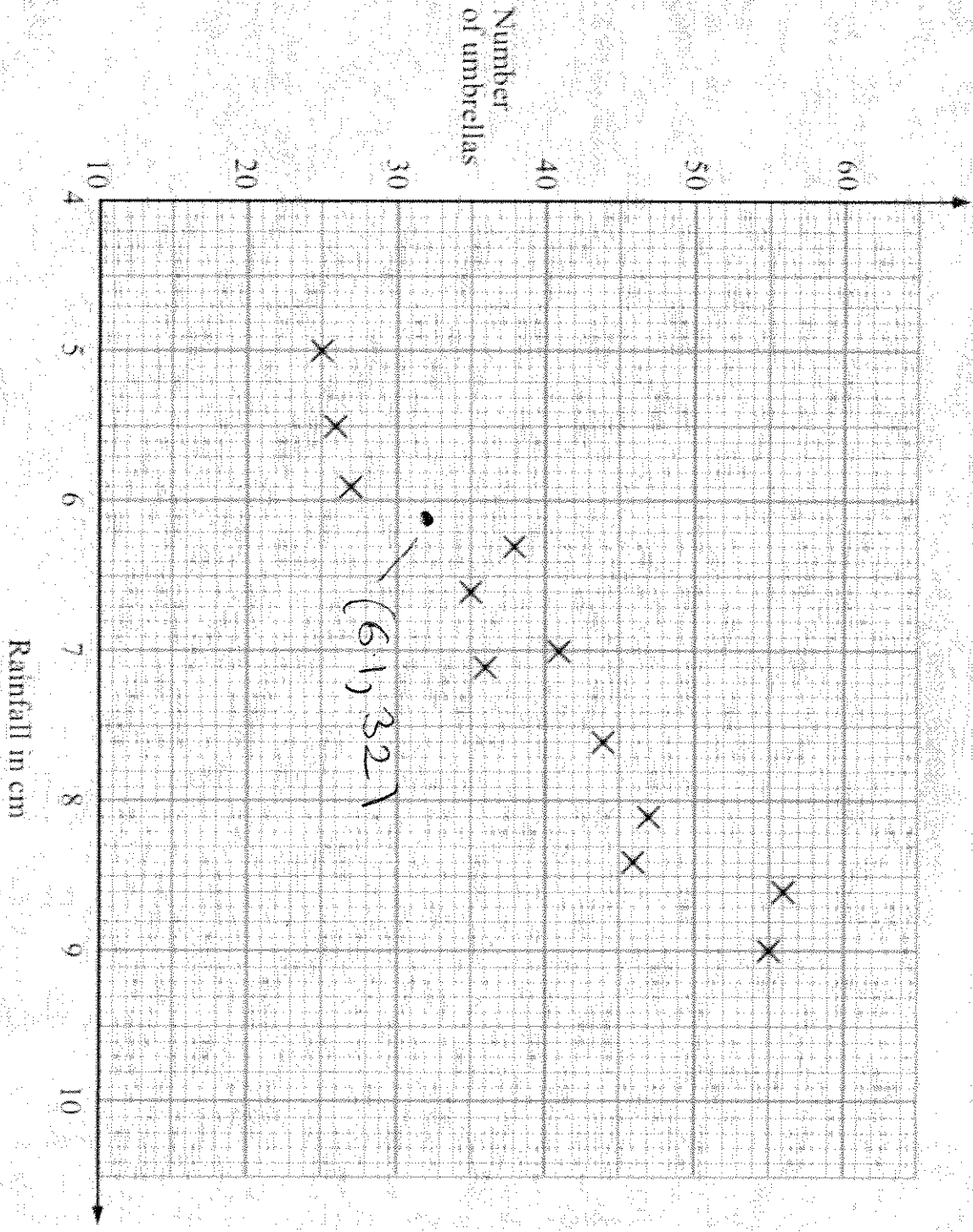
£ 9.80

(3)

(Total 3 marks)

5. Mr Wither sells umbrellas.

The scatter graph shows some information about the number of umbrellas he sold and the rainfall, in cm, each month last year.



In January of this year, the rainfall was 6.1 cm.
During January, Mr Wither sold 32 umbrellas.

(a) Show this information on the scatter graph.

(1)

(b) What type of correlation does this scatter graph show?

positive

(1)

(2)

9. There are some sweets in a bag.

18 of the sweets are toffees.

12 of the sweets are mints.

- (a) Write down the ratio of the number of toffees to the number of mints.
Give your ratio in its simplest form.

$$\begin{array}{l} \div 6 \\ 18 : 12 \end{array} \div 6 \\ \downarrow \quad \downarrow \\ 3 : 2$$

divide by highest
common factor (6)

(2)

There are some oranges and apples in a box.

The total number of oranges and apples is 54

The ratio of the number of oranges to the number of apples is 1 : 5

- (b) Work out the number of apples in the box.

$$54 \div 6 = 9$$

$$1 \text{ Shave} = 9$$

Apples have 5 Shaves

$$5 \times 9 = 45$$

45

(2)

(Total 4 marks)

8. (a) Simplify $x^5 \times x^4$

(1)

$$x^5 \times x^4 = x^{5+4}$$

$$x^9$$

(b) Simplify $y^7 \div y^2$

(1)

$$y^{7-2} = y^5$$

(c) Expand and simplify $3(2a + 5) + 5(a - 2)$

(2)

$$\underline{6a} + 15 + \underline{5a} - 10$$

$$11a + 5$$

$$y^2 + 5y + 7y + 35$$



	y	5
y	y^2	$5y$
7	$7y$	35

5+7

5+7



$$y^2 + 12y + 35$$

(2) (d) Expand and simplify $(v + 5)(v + 7)$

~~2~~

6

13 Bob asked each of 40 friends how many minutes they took to get to work.

The table shows some information about his results.

Time taken (m minutes)	Frequency
$0 < m \leq 10$	3
$10 < m \leq 20$	8
$20 < m \leq 30$	11
$30 < m \leq 40$	9
$40 < m \leq 50$	9

mid-point

5 15

15 120

25 275

35 315

45 405

1130

12

Work out an estimate for the mean time taken

40

$$\text{mean} = 1130 \div 40$$

28.25

$$4 \overline{) 113000} \\ \underline{28 \cdot 25}$$

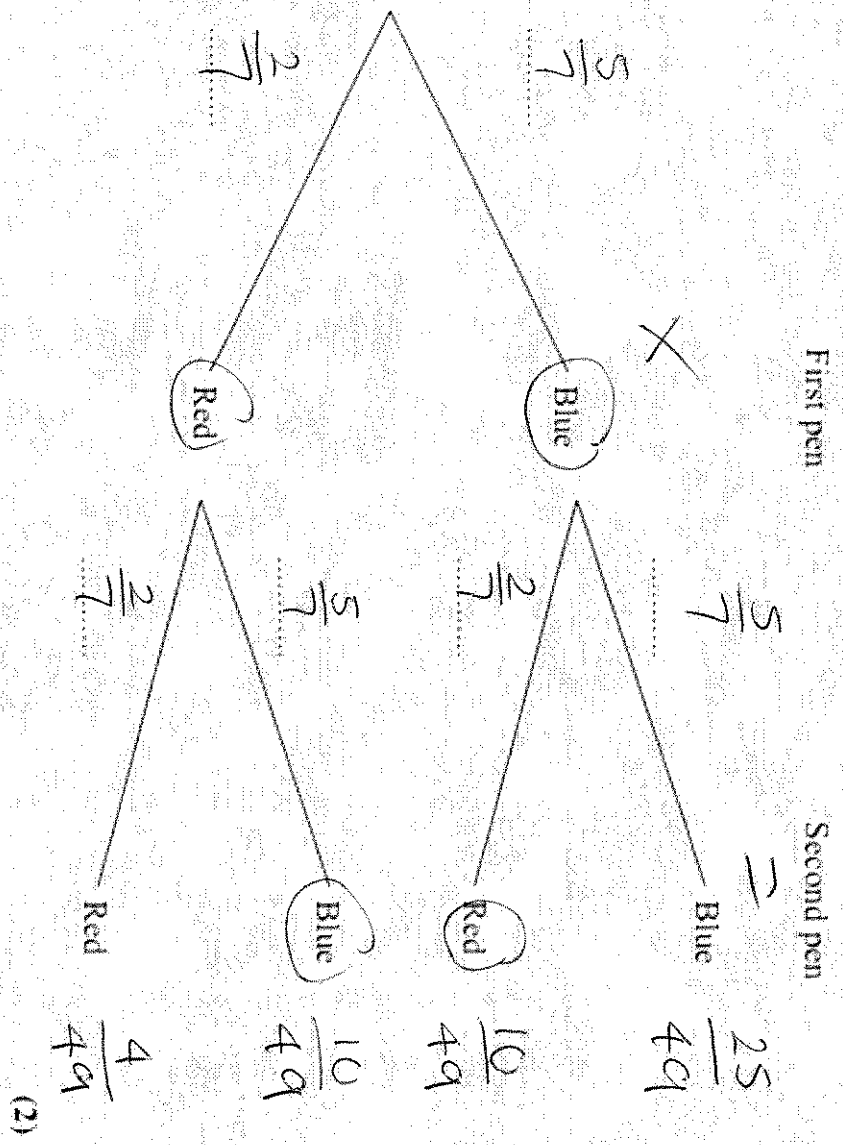
(4)

1. Emma has 7 pens in a box.
 5 of the pens are blue.
 2 of the pens are red.

Emma takes at random a pen from the box and writes down its colour.
 Emma puts the pen back in the box.

Then Emma takes at random a second pen from the box, and writes down its colour.

- (a) Complete the probability tree diagram.

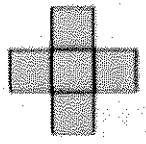


- (b) Work out the probability that Emma takes exactly one pen of each colour from the box.

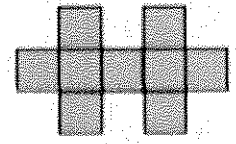
Blue & Red or Red and Blue

$$\frac{10}{49} + \frac{10}{49} = \frac{20}{49}$$

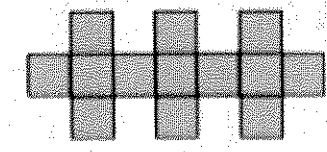
1. Here are some patterns made from squares.



Pattern number 1

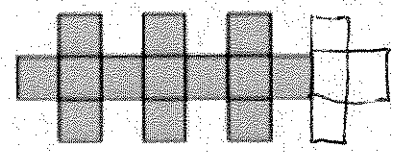


Pattern number 2



Pattern number 3

(a) The diagram below shows part of Pattern number 4. Complete the diagram for Pattern number 4.



Pattern number 4

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of squares	5	9	13	17	21

Handwritten notes and calculations:

OV

6 7 8 9 (10)

~~25 29 33~~ 37 41

(1)

(c) Find the number of squares used for Pattern number 10.

Handwritten solution:

rule $4n + 1$

10th pattern $4(10) + 1$

41

(1) Q1

(3)

21. 258 students each study one of three languages.
The table shows information about these students.

	Language studied		
	German	French	Spanish
Male	45	52	26
Female	25	48	62

A sample, stratified by the language studied and by gender, of 50 of the 258 students is taken.

- (a) Work out the number of male students studying Spanish in the sample.

Spanish
male

$$\frac{26}{258} \times 50 =$$

↑
sample
size

total no
of students

2

(b) Solve $3x - 10 = x + 30$

$$3x - 10 = x + 30$$

$$3x - x = 30 + 10$$

$$2x = 40$$

$$x = 20$$

(2)

6. (a) Simplify $7x + 2y - x + 3y$

$$7x - x + 2y + 3y$$

$$6x + 5y$$

(2)

(b) Solve $2x + 3 = 10$

$$2x = 10 - 3$$

$$2x = 7$$

$$x = \frac{7}{2} = 3.5$$

4

(2)

10. Toby invested £4500 for 2 years in a savings account. He was paid 4% per annum compound interest.

(a) How much did Toby have in his savings account after 2 years?

$$£4500 \times 1.04^2$$

(3)

Jasjit invested £2400 for n years in a savings account. He was paid 7.5% per annum compound interest.

At the end of the n years he had £3445.51 in the savings account.

(b) Work out the value of n .

$$2400 \times 1.075^n = 3445.51$$

try different values of n

(6)

Q

← 6 cm →

↑
8 cm
↓

$$A = \frac{1}{2} (6 + 14) \times 8$$

$$= \frac{1}{2} \text{ of } 20 \times 8$$

$$10 \times 8$$

$$= \underline{\underline{80 \text{ cm}^2}}$$

⑦
②

← 14 cm →