GCSE LINKED PAIR PILOT

4363/01

WJEC CBAC

METHODS IN MATHEMATICS
UNIT 1: METHODS (NON-CALCULATOR)
FOUNDATION TIER

A.M. WEDNESDAY, 11 January 2012

$1\frac{1}{2}$ hours

CALCULATORS ARE NOT TO BE USED FOR THIS PAPER

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **10**.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1	**4**	
2	**2**	
3	**6**	
4	**5**	
5	**3**	
6	**5**	
7	**12**	
8	**8**	
9	**6**	
10	**8**	
11	**6**	
12	**5**	
13	**5**	
14	**2**	
15	**3**	
TOTAL MARK		

Formula List

Area of trapezium = $\frac{1}{2}(a+b)h$
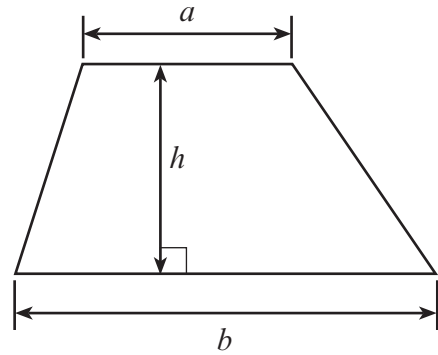
Volume of prism = area of cross-section × length
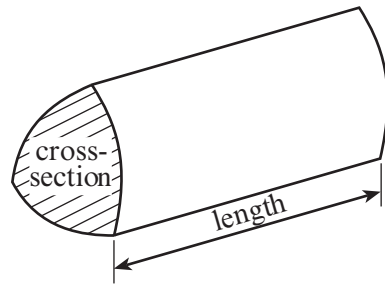
1. In this question you may **only** use the numbers in the following table.

18	13
5	15
21	10

(a) Write down two numbers that add up to 33.

....

....

....
[1]

(b) Write down a factor of 20.

....
[1]

(c) Write down a prime number.

....
[1]

(d) Write down a multiple of 7.

....
[1]

2. What is the difference in the values of the 6 in the numbers 4652 and 71 846?

....

....

....
[2]

Turn over.

3. Calculate each of the following.

(a) 700 – 432

....

....

....
[1]

(b) 29 × 6

....

....

....
[1]

(c) 161 ÷ 7

....

....

....
[1]

(d) 463 × 27

....

....

....

....

....
[3]

4. *(a)* From the list below, choose **one** expression to describe the probability of each of the events happening.

impossible   unlikely   even chance   likely   certain
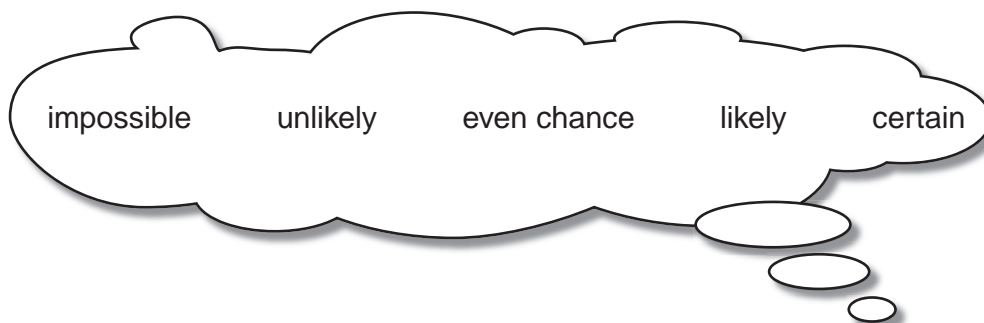
(i) Obtaining an 8 on a fair dice numbered 1 to 6.

....
[1]

(ii) There will be a sunny day in Swansea in July.

....
[1]

(iii) A person chosen at random from the audience at a concert has their birthday on the 10th April.

....
[1]

(b) The 26 letters of the English alphabet are put into a box. One is picked out at random. What is the probability that it is the letter F?

....

....
[1]

(c) For lunch, Sam either has a cooked meal or has sandwiches. The probability that Sam has a cooked meal for lunch is $\frac{11}{17}$. What is the probability that he has sandwiches for lunch?

....

....
[1]

Turn over.

5. On the grid below, plot point *A* with coordinates (2, 4).
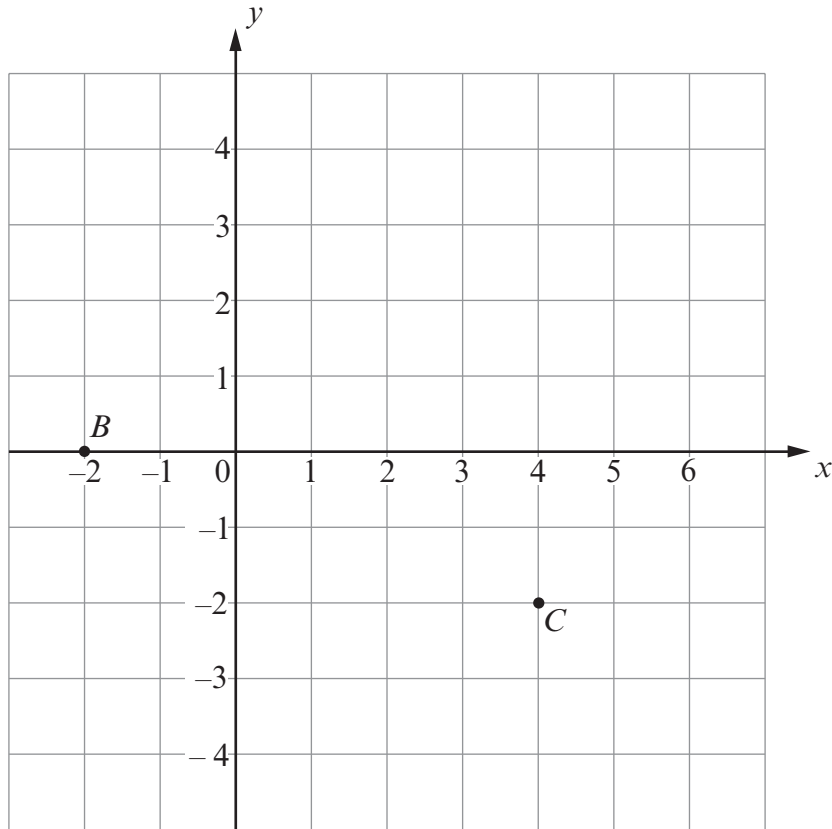
Write down the coordinates of the points *B* and *C*, shown in the grid.

The coordinates of *B* are (.............. , ...)

The coordinates of *C* are (.............. , ...)

[3]

6. The table below shows the scores in the final of the Langford Bay Golf Championship.
The player with the lowest score wins the championship.

Name	Score
A. Jenkins	–2
H. Smith	8
J. Evans	1
L. Hakami	–3
F. Loxley	–7
P.J. Ames	5
G. Francis	–1

(a) The table below lists some of the names and scores of the players in order from 1st place to 7th place.
Complete the table.

[3]

Position	Name	Score
1st		
2nd	L. Hakami	–3
3rd		
4th		
5th	J. Evans	1
6th	P.J. Ames	5
7th		

(b) What was the difference between the scores of the players in 2nd and 6th places?

....

....

[1]

(c) Which two players had a difference in their score of 5?

....

....

[1]

7. *(a)* Write down the next term in the sequence.

4,   13,   22,   31, ...

[1]

(b) Give the next term in the sequence **and** write in words the rule for finding the next term in the sequence.

240,   120,   60,   30, ...

Rule: ....

....

[2]

(c) For the number machine below,

| **INPUT** | → | Divide by 3 | → | Subtract 6 | → | **OUTPUT** |
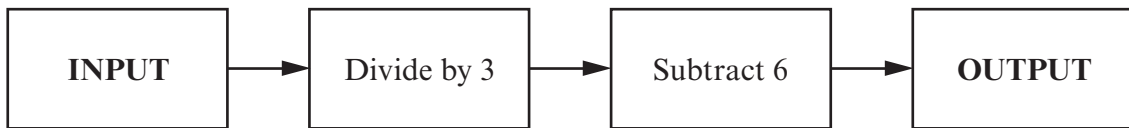
find the value of the **OUTPUT** when the **INPUT** is 21.

....

....

[1]

(d) Simplify $8a + a + 4a$.

....

[1]

(e) Simplify $4x + 7 + 9x - 1$.

....

....

[2]

(f) Simplify $2m + 3m - 2n$.

....

[1]

(g) Given that $m = 3n + 2p$, find the value of m when n is 10 and p is 7.

....

....

....

[2]

(h) Christina decides to run a 10 mile race but usually measures her distance in kilometres.

The following rule is used to change from kilometres to miles.

Number of miles = 5 × Number of kilometres ÷ 8

Calculate the number of kilometres that Christina will run in the 10 mile race.

....

....

....

....

[2]

8. *(a)* Find the size of the angles marked *a* and *b* in the diagram below.

145°

b

a
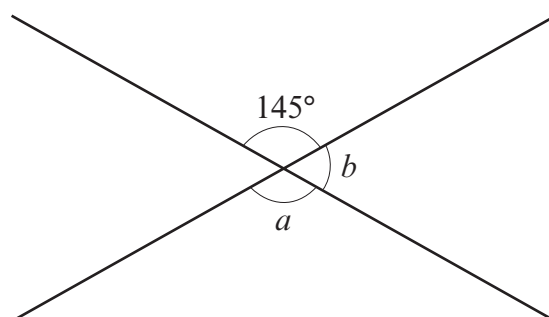
Diagram not drawn to scale

....

....

$a = $ .... ° $b = $ .... °

[3]

(b) Find the size of the angles marked *c* in the diagram below.

80°

c   *c*
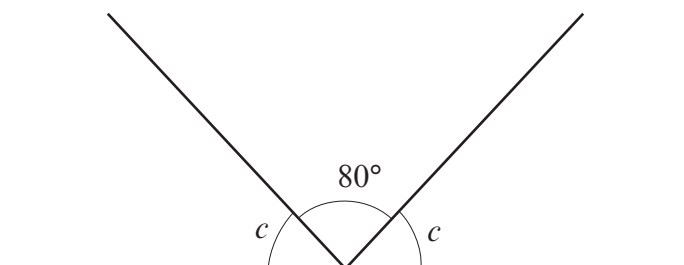
Diagram not drawn to scale

....

....

$c = $ .... °

[2]

(c) Find the size of the angle marked *d* in the diagram below.
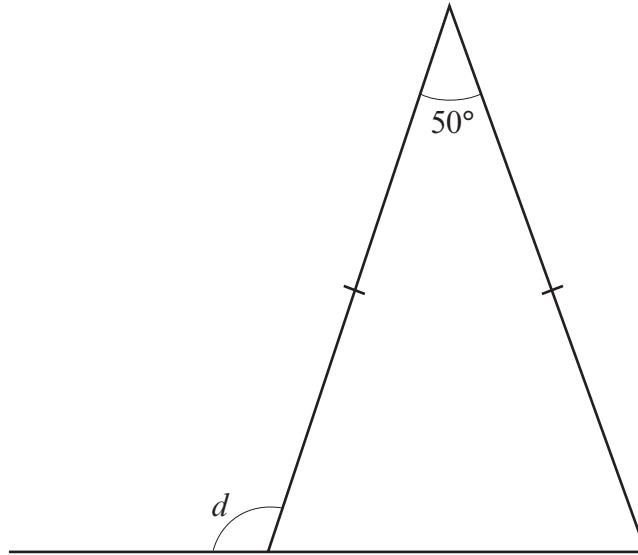
Diagram not drawn to scale

....

....

....

....

$d =$ .... °

[3]

Turn over.

9. The following two spinners are spun.
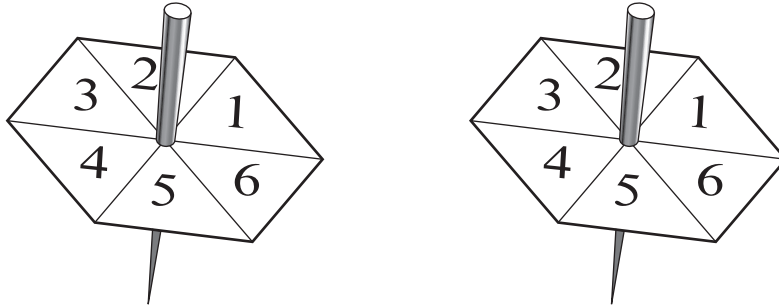
Kevin adds together the two numbers obtained to get a total score.
The table below shows some of the possible total scores.

Second spinner						
6	7	....	....	....	....	....
5	6	....	....	....	....	....
4	5	6	....	....	....	....
3	4	5	....	....	....	....
2	3	4	5	6	7	....
1	2	3	4	5	6	7
	1	2	3	4	5	6

First spinner

(a) Complete the table to show **all** the possible total scores.

[2]

(b) What is the probability of getting a total score of 9?

....

....

[2]

(c) If Kevin spins the two spinners 180 times, how many times would he expect to get a total score of 9?

....

....

....

[2]

10. *You will be assessed on the quality of your written communication in this question.*

A supermarket sells Jam Tarts in two sizes of box.

> Regular size   Box of 6   £1.30
>
> Jumbo size   Box of 15   £3

The supermarket has a special offer.

> **Buy any box
> &
> get a 2nd box of the same size
> or of a smaller size for ½ price!**

Mrs Jones needs 70 Jam Tarts for the local church coffee morning.
Explain clearly, which is the cheapest way for her to buy the Jam Tarts and how much would they cost.

....

....

....

....

....

....

....

....

....

....

....

....

[8]

Turn over.

11. During a primary school activity day, children could take part in any of three different activites. 80 children played football, 95 children played rounders and 30 children danced.

40 children played football and rounders.
12 children played rounders and danced.
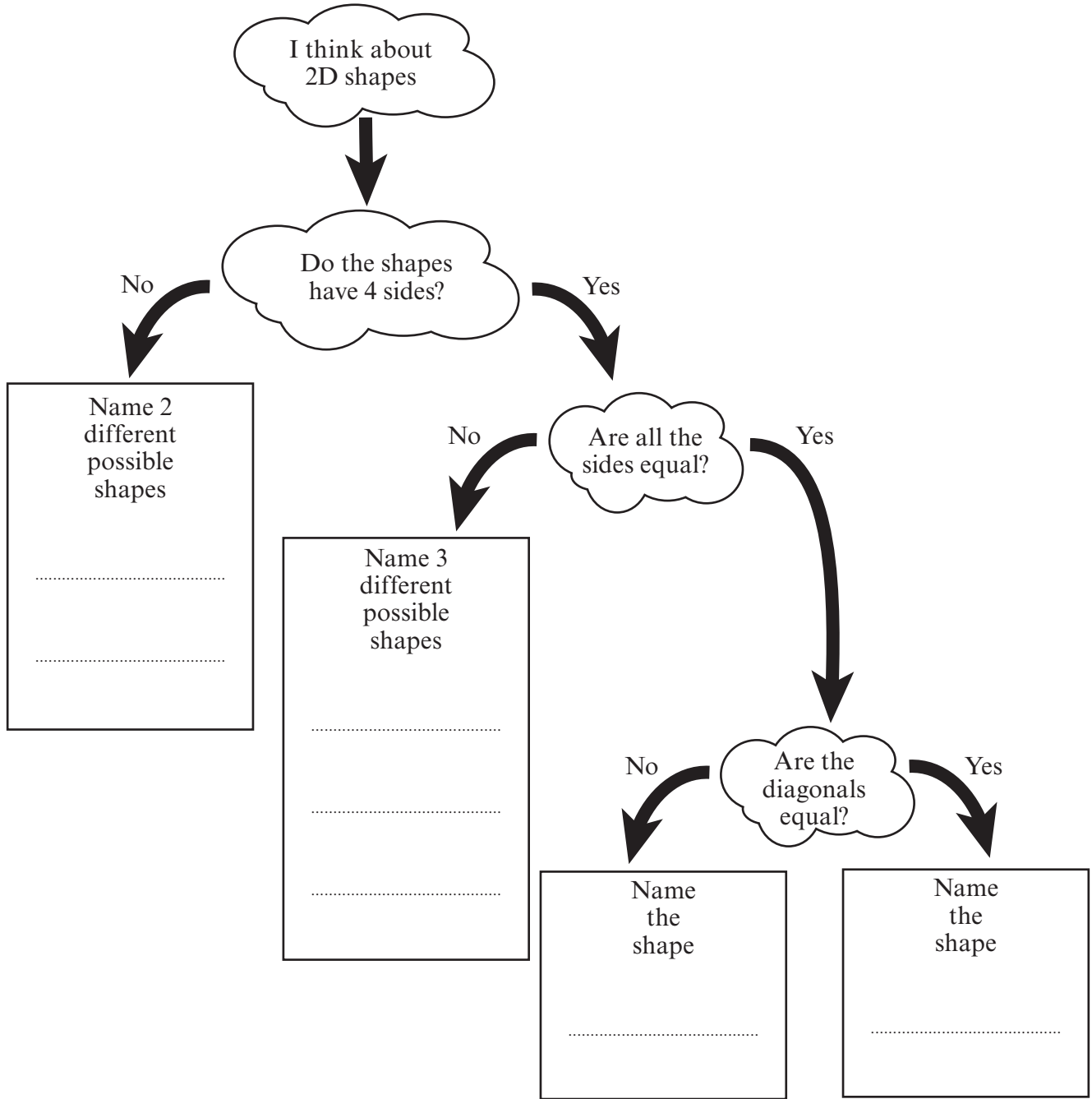20 children played football and danced.

3 children took part in all three activities.

Draw a Venn diagram to show the above information and find the total number of children who took part in the activity day.

The total number of children who took part in the activity day = ...

[6]

12. Fill in the answers in the shape sorter below.

I think about
2D shapes

Do the shapes
have 4 sides?

No

Yes

Name 2
different
possible
shapes

....

....

Are all the
sides equal?

No

Yes

Name 3
different
possible
shapes

....

....

....

Are the
diagonals
equal?

No

Yes

Name
the
shape

....

Name
the
shape

....

[5]

Turn over.

13.
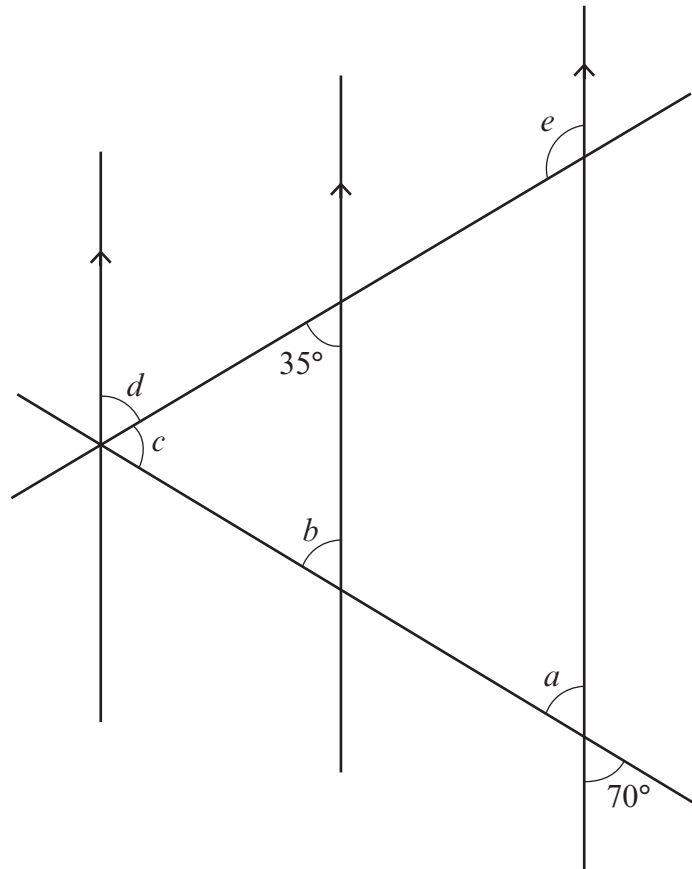
Diagram not drawn to scale

Find the size of the angles marked *a, b, c, d* and *e*.

....

....

....

$a = $ .... °

$b = $ .... °

$c = $ .... °

$d = $ .... °

$e = $ .... °

[5]

14. A die has previously been used and shown to be fair.
This fair die is thrown a further 60 times; a six is scored on the die on 15 of these throws.
Giving a reason for your answer, write down the probability that a six is scored on the next throw.

....

....

....

....

[2]

15. *(a)* Find the highest common factor of 30 and 75.

....

....

....

....

....

[1]

(b) Find the lowest common multiple of 6 and 21.

....

....

....

[2]

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