

# COUNTDOWN TO YOUR FINAL MATHS EXAM ...

## PART 3 (2017)

	Marks	Actual	  
Q1. Stem & leaf – comparing distributions/ Venn diagrams	<b>6</b>		
Q2. Decimals to fractions	<b>2</b>		
Q3. Venn Diagrams	<b>6</b>		
Q4. Median / Mean	<b>4</b>		
Q5. Range	<b>3</b>		
Q6. Comparing distributions	<b>4</b>		
Q7. Drawing charts and diagrams	<b>6</b>		
Q8. Algebraic expression for the mean	<b>2</b>		
Q9. Median/range and mean	<b>6</b>		
Q10. Median / comparing distributions	<b>6</b>		
Q11. Mode/Mean & reverse mean	<b>5</b>		
Q12. Mean	<b>2</b>		
Q13. Reverse mean	<b>3</b>		
Q14. Mean	<b>2</b>		
Q15. Reverse mean	<b>3</b>		
Q16. Reverse mean	<b>3</b>		
Q17. Fraction addition and division	<b>4</b>		
Q18. Fractions to percentages	<b>1</b>		
Q19. Decimals to fractions	<b>1</b>		

**69**

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**Q1.** Some students watched a film.

James recorded the heart rates, in beats per minute, of the students after they had watched the film.

The back-to-back stem and leaf diagram gives information about his results.

Female		Male
8 5	7	6 7 9
7 5 4 3 0	8	3 5 7 8
9 8 6 1	9	2 3 5 7 8
	10	1 3 7

**Key**

5|7 represents 75 beats per minute for female students

7|6 represents 76 beats per minute for male students

(a) Compare the distribution of the heart rates of the female students and the distribution of the heart rates of the male students.

**(3)**

13 of the 26 students like comedy films.

16 of the 26 students like science fiction films.

5 of the 26 students like both comedy and science fiction films.

(b) Draw a Venn diagram to show this information.

**(3)**

**(Total for question = 6 marks)**

**Q2.** Write 0.075 as a fraction. Give your fraction in its simplest form.

**(Total for question = 2 marks)**

**Q3.** There are 80 students at a language school.

All 80 students speak at least one language from French, German and Spanish.

9 of the students speak French, German and Spanish.

19 of the students speak French and German.

28 of the students speak French and Spanish.

17 of the students speak Spanish and German.

45 students speak French.

50 students speak Spanish.

(a) Draw a Venn diagram to show this information.

**(3)**

One of the 80 students is selected at random.

(b) Find the probability that this student speaks German but not Spanish.

**(1)**

Given that the student speaks German,

(c) find the probability that this student also speaks French.

**(2)**

**(Total for question = 6 marks)**

**Q4.** Here is a list of numbers.

4      8      5      9      10      5      6      3      4

(a) Work out the median.

**(2)**

(b) Work out the mean.

**(2)**

**(Total for Question is 4 marks)**

**Q5.** 14 students did a history test.

Here are the results.

Girls	3	8	2	4	3	4	4	6
Boys	3	6	3	3	1	4		

Adele says: "The range of the girls' marks is 1 more than the range of the boys' marks."

Is Adele right? You must show your working.

**(Total for Question is 3 marks)**

**Q6.** There are two trays of plants in a greenhouse.  
The first tray of plants was given fertiliser.  
The second tray of plants was not given fertiliser.

On Monday the heights of the plants were measured in centimetres.  
The boxes show some information about the heights of the plants.

Heights of the plants given fertiliser							
22	29	30	35	37	40	44	47
48	48	54	56	59	66	72	

Information about the heights of plants not given fertiliser			
Smallest	18	Lower quartile	26
Largest	64	Upper quartile	47
Median	44		

Compare the distribution of the heights of the plants given fertiliser to the distribution of the heights of the plants not given fertiliser.

**(Total for Question is 4 marks)**

**Q7.** Mr Khan asked the 22 students in his class what activity they wanted to do on a school trip.  
Here are the results.

bowling	swimming	roller skating	swimming
swimming	bowling	roller skating	roller skating
roller skating	swimming	roller skating	swimming
swimming	cinema	bowling	cinema
cinema	roller skating	swimming	swimming
swimming	bowling		

(a) Complete the frequency table.

Activity	Tally	Frequency
bowling		
swimming		
roller skating		
cinema		

**(2)**

(b) Write down the mode.

**(1)**

(c) Show the results of Mr Khan's survey in a suitable diagram.


**(Total for Question is 6 marks)**

**Q8.** Dan, Harry and Regan sell cars.

Dan sells  $x$  cars.

Harry sells 5 more cars than Dan.

Regan sells twice as many cars as Dan.

Write an expression, in terms of  $x$ , for the mean number of cars Dan, Harry and Regan sell.

**(Total for question = 2 marks)**

**Q9.** Here is the number of goals a hockey team scored in each of 10 matches.

3 4 3 2 5 3 5 6 2 4

Find

(i) the median

(ii) the range

(iii) the mean

**(Total for Question is 6 marks)**

**Q10.** Mrs Smith asked each student in her class to record the numbers of times they used their mobile phone last Saturday.

Here are the results for the boys.

Boys            8        10        8        9        7        9        8        13        14

(a) Work out the median.

**(2)**

Here are the results for the girls.

Girls            6        8        9        9        10        14        14

(b) Compare the numbers of times the boys used their mobile phones with the numbers of times the girls used their mobile phones.

**(4)**

**(Total for question = 6 marks)**

**Q11.** Here is the number of goals scored by a football team in each of its first 10 games.

3      1      4      2      0      1      1      1      3      2

(a) Write down the mode.

**(1)**

(b) Work out the mean number of goals for the first 10 games.

**(2)**

In the 11th game the team scored 4 goals.

In the 12th game the team scored 2 goals.

(c) Will the mean number of goals for the 12 games be greater than or less than the mean number of goals for the first 10 games?

You must explain your answer.

**(2)**

**(Total for Question is 5 marks)**

**Q12.** Mr Brown gives his class a test.

The 10 girls in the class get a mean mark of 70%

The 15 boys in the class get a mean mark of 80%

Nick says that because the mean of 70 and 80 is 75 then the mean mark for the whole class in the test is 75%

Nick is not correct.

Is the correct mean mark less than or greater than 75%?

You must justify your answer.

**(Total for question = 2 marks)**

**Q13.** Walkden Reds is a basketball team.

At the end of 11 games, their mean score was 33 points per game.

At the end of 10 games, their mean score was 2 points higher.

Jordan says: "Walkden Reds must have scored 13 points in their 11th game."

Is Jordan right?

You must show how you get your answer.

**(Total for question is 3 marks)**

**Q14.** The manager of a clothes shop recorded the size of each dress sold one morning.

10 10  
12 12  
14 14 14 14 14 14  
16 16 16 16  
18 18 18  
20 20 20

The sizes of dresses are always even numbers.  
The mean size of the dresses sold that morning is 15.3

The manager says: "The mean size of the dresses is **not** a very useful average."

(i) Explain why the manager is right.

(ii) Which is the more useful average for the manager to know, the median or the mode?  
You must give a reason for your answer.

**(Total for question is 2 marks)**

**Q15.** Hertford Juniors is a basketball team.

At the end of 10 games, their mean score is 35 points per game.

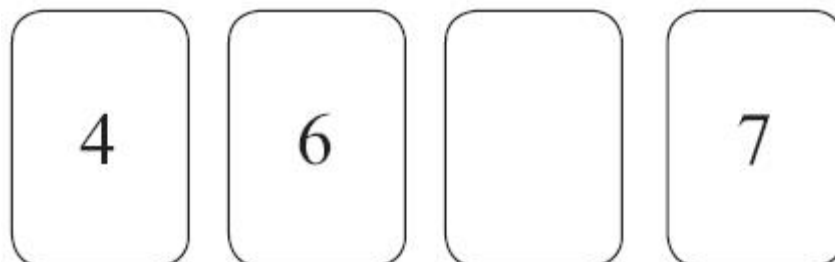
At the end of 11 games, their mean score has gone down to 33 points per game.

How many points did the team score in the 11th game?

**(Total for Question is 3 marks)**

**Q16.** Here are four number cards.

One of the cards is turned over so you cannot see the number on it.



The mean of the four numbers is 6

Work out the number you **cannot** see.

**(Total for Question 10 is 3 marks)**



**Q17.** (a) Work out  $\frac{2}{7} + \frac{1}{5}$

(2)

(b) Work out  $1\frac{2}{3} \div \frac{3}{4}$

(2)

**(Total for question = 4 marks)**

**Q18.** (a) Work out  $1\frac{3}{4} + 3\frac{1}{2}$

(1)

(b) Work out  $\frac{3}{7} \times \text{£}28$

(2)

(c) Estimate the value of  $19.89 \times 201.71$

(2)

**(Total for question = 5 marks)**

**Q19.** (a) Write  $\frac{1}{8}$  as a percentage.

(1)

(b) Work out  $\frac{5}{6}$  of 600.

(2)

**(Total for question = 3 marks)**