

Statistics

1. The stem and leaf diagram shows the ages, in years, of 15 members of a club.
(i) How many members are over 40? (ii) What is the median age of members?

2	7	8				
3	0	2	4	8		
4	1	2	3	3	4	6
5	3	6				
6	2					

2. Calculate an estimate of the mean weight

Weight (w kg)	Frequenc y
$800 \leq w < 900$	1
$900 \leq w < 1000$	2
$1000 \leq w < 1100$	4
$1100 \leq w < 1200$	3
$1200 \leq w < 1300$	7
$1300 \leq w < 1400$	3
$1400 \leq w < 1500$	5

3. A restaurant manager wants to find out how often local people eat in a restaurant. Design a suitable question for her to use on a questionnaire.
4. Find the mode and median of the following eleven numbers;
8 5 4 5 7 10 9 5 11 5 6
5. This cumulative frequency table gives information about the amount spent by 120 people on holiday. draw a cumulative frequency curve, and use it to estimate the median.

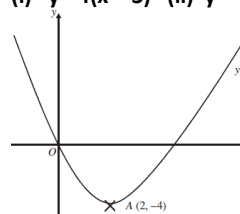
Amount (£4) spent	Cumulative frequency
$0 \leq A < 100$	13
$0 \leq A < 150$	25
$0 \leq A < 200$	42
$0 \leq A < 250$	64
$0 \leq A < 300$	93
$0 \leq A < 350$	110
$0 \leq A < 400$	120

Number

1. (i) Work out 45% of 800 (ii) Write 176 as a percentage of 800
2. £250 is invested for 5 years at compound interest of 3.5%. How much is it worth in the end.
3. 36 is split between 3 people in the ratio 2 : 3 : 4. How much is the biggest share?
4. Express 252 as a product of its prime factors
5. The Highest Common Factor of two numbers is 3. The Lowest Common Multiple is 45. What are the two numbers?
6. (a) Work out $1\frac{7}{8} \times 5\frac{1}{3}$
- (b) Work out $3\frac{1}{2} \div 2\frac{4}{5}$
7. Is 285 kilometres per hour about the same as 80 metres per second?
8. Write $27^{-\frac{2}{3}}$ as a fraction.
9. The length of a rectangle is 30cm, the width 15cm, both correct to 2 sig fig. (a) Write down the upper bound of the length (b) Calculate the upper bound of the area
10. Express $(3 + \sqrt{2})^2$ in the form $a + b\sqrt{2}$ where a and b are integers.

Algebra

1. Simplify $2(2n + 3) + 3(n + 1)$
2. $s = 0.5at^2$
Find the value of s when $t = 3$ and $a = \frac{1}{4}$
3. 5 8 11 14 are the first four terms of an arithmetic sequence. Find an expression in terms of n for the nth term.
4. Expand $x(3x - 5y)$
5. Factorise $9x^2 - 4y^2$
6. y is proportional to the square of x. If $y = 18$ when $x = 3$, what is the value of y when $x = 4$?
7. Solve the equation $\frac{2x+15}{5} = \frac{7x-5}{6}$
8. This is a sketch of $y = f(x)$. Write down the coordinates of A on the curve with equation
(i) $y = f(x - 3)$ (ii) $y = f(x) - 5$



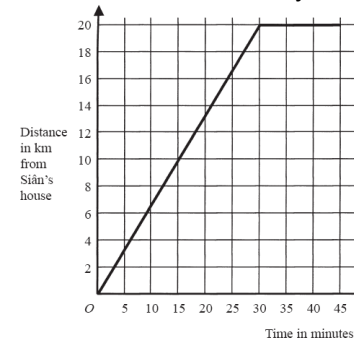
9. Write the expressions $x^2 + 8x$ in the form $(x + a)^2 - b$ where a and b are integers.

Graphs

1. Complete this table for $y = x^2 + x - 3$, then draw the graph of $y = x^2 + x - 3$ for these values

x	-4	-3	-2	-1	0	1	2
y			-1	-3			3

2. This is part of a travel graph. What is the speed for the first 30min of the journey?



3. Sketch the curve $y = \sin x^\circ$ over the domain $0^\circ \leq x^\circ \leq 360^\circ$.

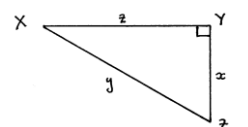
Are you exam ready?

- Have you got all the necessary equipment?
- Is your calculator set in *degree mode*? You should be able to see a *D* on your screen. Test it $\sin 30^\circ = 0.5$
- Do you know that answers have to be written in *black ink* (no pencil, except for diagrams and graphs)?
- The exams are on **Thursday 26th May and Thursday 9th June**. Do you know what time you have to arrive at the examination hall?
- Do you know the formulae for the Area and Perimeter of a circle?

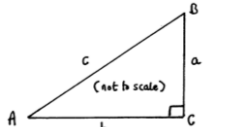
$$A = \pi r^2 \quad P = 2\pi r$$

Trigonometry, Area & Volume

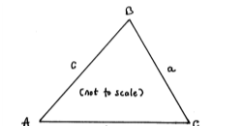
1. XY = 12cm and YZ = 5cm. What is XZ?



2. If $A^\circ = 50^\circ$ and $c = 5$ cm, what is side a?



3. If $A^\circ = 60^\circ$, $a = 6$ cm and $C^\circ = 55^\circ$, what is side c?



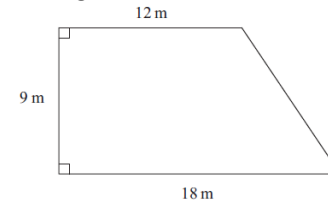
4. A circular dinner plate has a radius of 13 cm. Calculate the area of the plate.

Problem solving

1. Which of these 3 shops gives the best deal?

Sports '4' All Trainers	Edexcel Sports Trainers	Keef's Sports Trainers
£5 plus 12 payments of £4.50	$\frac{1}{5}$ off usual price of £70	£50 plus VAT at 20%

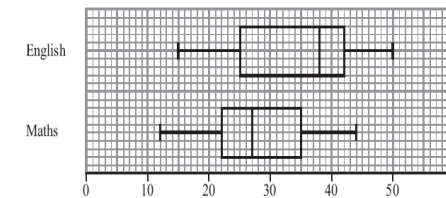
2. What is the cost of covering the garden below with grass seed.



Grass seed is sold in bags at £4.99. Each bag covers $20m^2$.

Statistics & Probability

1. These boxplots compare marks in an English test and marks in a Maths test for the same bunch of students. Compare the distribution of the marks in these 2 tests.



2. The number of students in a school is shown in the table. How many female students in Y10 would you need to survey in a stratified sample of 50 students?

	Y7	Y8	Y9	Y10	Y11	Total
Male	47	51	62	28	55	243
Female	33	44	56	53	51	237
Total	80	95	118	81	106	480

3. This shows the probabilities that a spinner will land on 1, 2, 3, 4 or 5. The spinner is spun 200 times. Estimate the number of times the spinner will land on a 5.

Number	1	2	3	4	5
Probability	0.15	0.20	0.10	0.25	0.30

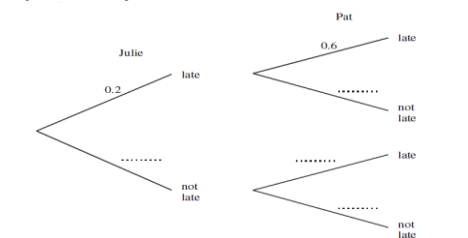
4. This frequency table shows how long cars spent in a car park. Draw a histogram to show this information.

Time (minutes)	Number of vehicles
$0 < t \leq 20$	25
$20 < t \leq 50$	45
$50 < t \leq 100$	100
$100 < t \leq 120$	50
$120 < t \leq 180$	30

5. (a) Complete this two-way table. (b) One person is chosen at random. What is the probability that this person does not wear glasses?

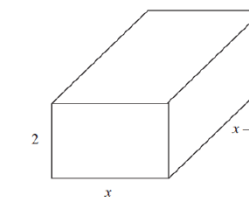
	Wear glasses	Not wear glasses	Total
Male		32	60
Female			40
Total	43		100

6. (a) Complete the diagram. (b) what is the probability that both will arrive late.



Equations

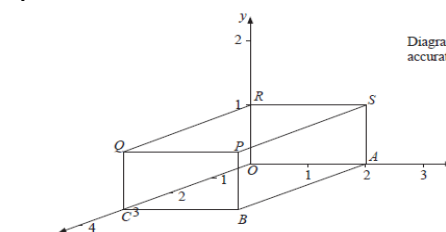
1. The equation $x^3 - 2x = 67$ has a solution between 4 and 5. Use trial and improvement to solve this to 1 decimal place.
2. Solve the inequality $3x + 2 > -7$
3. Solve $7r + 2 = 5(r - 4)$
4. The diagram shows a cuboid with volume $51cm^3$. Show that $2x^2 - 4x - 51 = 0$ for $x > 2$



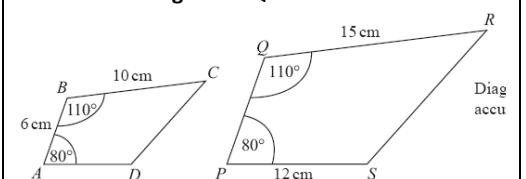
5. Make s the subject of the formula $v^2 = u^2 + 2as$
6. Solve by factorising the quadratic equation $x^2 - 2x - 8 = 0$.
7. Solve the quadratic equation $2x^2 + 10x + 1 = 0$ giving your solutions correct to 2dp.
8. Solve the following simultaneous equations:
 $2x + 3y = 13$
 $3x + 4y = 18$
9. Solve the following simultaneous equations:
 $x^2 + y^2 - 25 = 0$
 $y - x - 1 = 0$

Shape & Space

1. Work out the size of an exterior angle of a regular pentagon.
2. (a) Write down the letter with coordinates (2, 1, 0) (b) Write down the coordinates of P

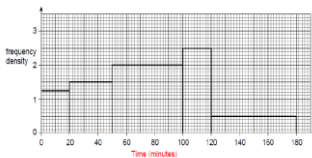


3. Find the equation of the straight line passing through the points (2, 10) and (5, 22).
4. ABCD and PQRS are mathematically similar. Find the length of PQ



Answers; Statistics 1(i) 9 (ii) 42 2 1218 3 Should have at least 3 non-overlapping response boxes, and include a timescale 4 Mode 5 Median 6 5 Ogive drawn – median 240 Number 1 (i) 360 (ii) 22 2 £296.92 3 16 4 $2 \times 2 \times 3 \times 3 \times 7$ 5 9 and 15 or 45 and 3 6 (a) 10 (b) $1\frac{1}{4}$
7 80 m/s = 288 Km/hr, so yes, roughly the same. 8 1/9 9 (a) 30.5cm (b) 472.75cm² 10 $11 + 6\sqrt{2}$ Algebra 1 7n + 9 2 s = 9/8 3 3n + 2 4 $3x^2 - 5xy$ 5 $(3x + 2y)(3x - 2y)$ 6 y = 32 7 x = 5 8 (5,-4) & (2,-9) 9 $(x + 4)^2 - 16$ Problem solving 1 Sports 4 All;£59 Edexcel;£56 Keef;£60.
Edexcel best value 2 area is 135m² ; need 7 bags costing £34.93 Equations 1 4.2 2 $x > -3$ 3 R = -11 4 Multiply length by width by breadth and put = to 51 5 $s = (v^2 - u^2)/2a$ 6 x = 4 and -2 7 x = -0.10 and -4.90 8 x = 2, y = 3 9 x = 3, y = 4 and x = -4, y = -3 Shape & Space
1 72° 2 (a) S (b) (2, 1, 3) 3 $y = 4x + 2$ 4 9cm Trigonometry 1 XZ = 13cm 2 a = 3.8cm (1dp) 3 c = 5.7cm (1dp) 4 531cm² 5 Area = $\pi x^2/3$ Perimeter = $2x + 2\pi x/3$ 6 43° as the angle at the circumference is half the angle at the centre 7 QS = -2a + 2b MN = -a + b

Statistics & Prob 1 Compares medians and either IQR or Range 2 6 3 60 4



5 (a)

	Wear glasses	Not wear glasses	Total
Male	28	32	60
Female	15	25	40
Total	43	57	100

(b) 57/100

6 (a) John 0.8, Pat 0.4, 0.6, 0.4 (b) 0.12

Graphs 1

y	9	3	-1	-3	-3	-1	3
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2 40 km/h

