Perth Academy

Mathematics Department

Intermediate 2

Unit 2 – Revision Pack

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Simple Statistics

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Trigonometry ~ Sine, Cosine & Tangent

Q1. **a**. With the help of a calculator, copy and complete the table below.

x^o	0	30	60	90	120	150	180	210	240	270	300	330	360
$\sin x^o$													

b. Plot the points from your table.
c. Join the points with a smooth curve.
d. Write down the equation of the curve.

Q2. **a**. With the help of a calculator, copy and complete the table below.

x^o	0	30	60	90	120	150	180	210	240	270	300	330	360
$\cos x^o$													

b. Plot the points from your table.
c. Join the points with a smooth curve.
d. Write down the equation of the curve.

Q3. .**a**. With the help of a calculator, copy and complete the table below.

x^o	0	30	60	90	120	150	180	210	240	270	300	330	360
$\tan x^o$													

b. Plot the points from your table.(Be careful with the scale on the *y*-axis)
c. Join the points with a smooth curve.
d. Write down the equation of the curve.

Q4. Write down the value of

a.	$\sin 30^o$	**b**.	$\sin 150^o$	**c**.	$\sin 210^o$	**d**.	$\sin 330^o$
e.	$\cos 30^o$	**f**.	$\cos 150^o$	**g**.	$\cos 210^o$	**h**.	$\cos 330^o$
i.	$\tan 30^o$	**j**.	$\tan 150^o$	**k**.	$\tan 210^o$	**l**.	$\tan 330^o$

Q5. Copy and complete this table to show the values where sin, cos and tan are positive (+) or negative (–).

	$0 < x < 90$	$90 < x < 180$	$180 < x < 270$	$270 < x < 360$
$\sin x^o$	+			–
$\cos x^o$		–		
$\tan x^o$	+			

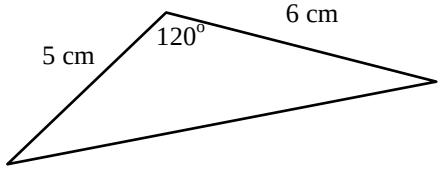
Q6. Write down the sign (+ or –) for the following

a.	$\cos 22^o$	**b**.	$\tan 123^o$	**c**.	$\sin 315^o$	**d**.	$\sin 15^o$
e.	$\tan 196^o$	**f**.	$\cos 295^o$	**g**.	$\tan 66^o$	**h**.	$\sin 132^o$
i.	$\cos 170^o$	**j**.	$\sin 218^o$	**k**.	$\cos 200^o$	**l**.	$\tan 300^o$

Trigonometry ~ Area of a Triangle

Q1. Find the area of the following triangles :

a.



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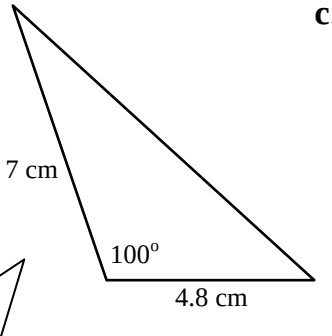

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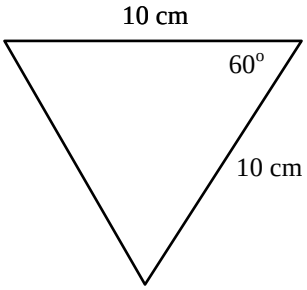

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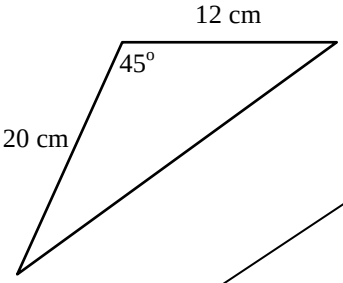

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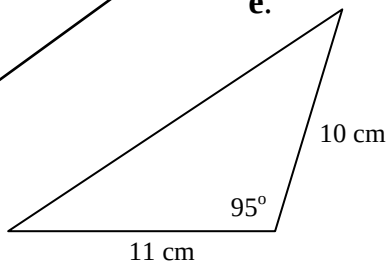

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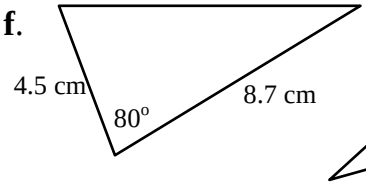
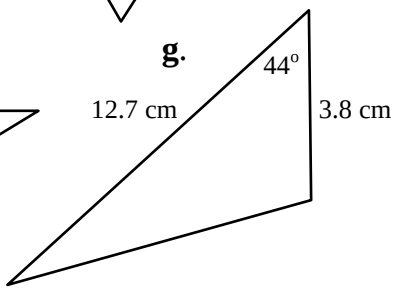


g.



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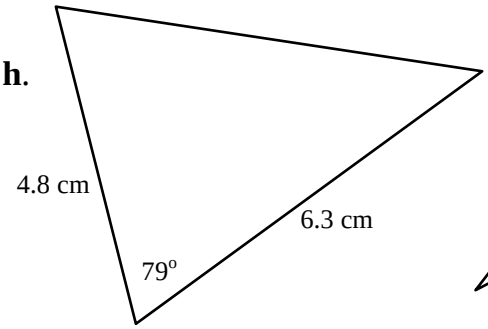
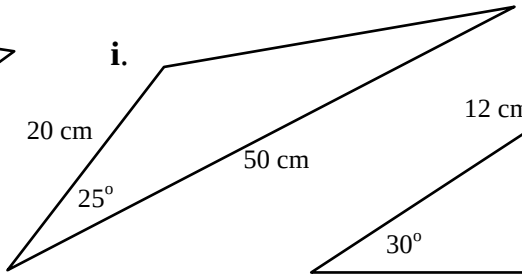


i.



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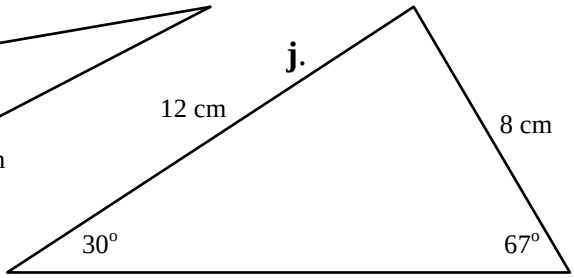
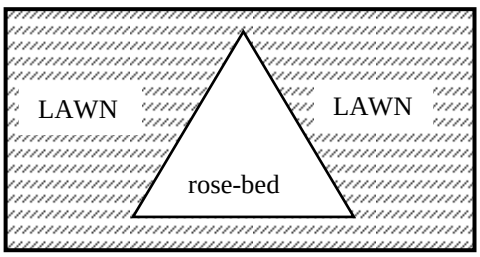
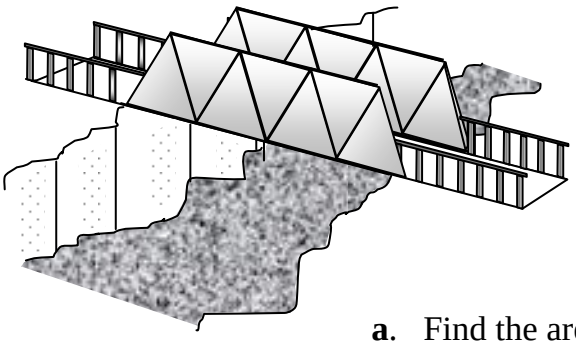


Q2. Mr. Fields is planting a rose-bed in his garden. It is to be in the shape of an equilateral triangle of side 2m.

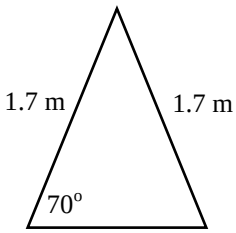
What area of lawn will he need to remove to plant his rose-bed ?



Q3.



For safety reasons the sides of a footbridge are to be covered with triangular panels. Each panel is an isosceles triangle as shown.



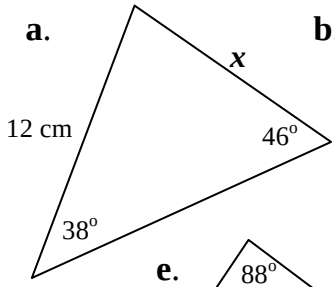
a. Find the area of each panel.

b. If there are 7 panels on each side of the bridge, find the total area of material required to cover the bridge.

Trigonometry ~ Sine Rule

Q1. Use the sine rule to calculate the length of the side marked ***x*** in each of the triangles below.

a.



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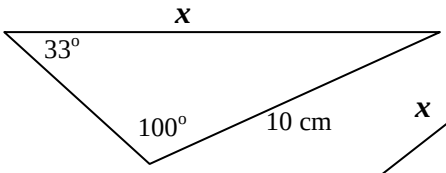

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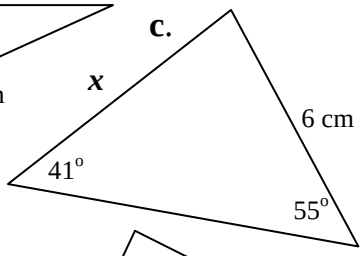

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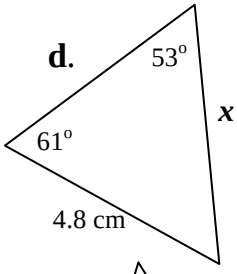

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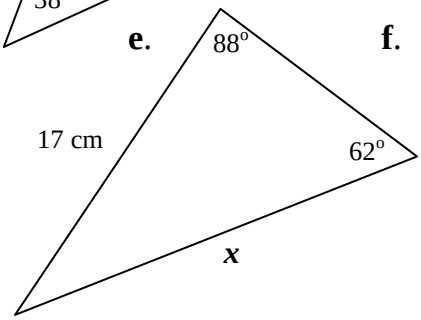

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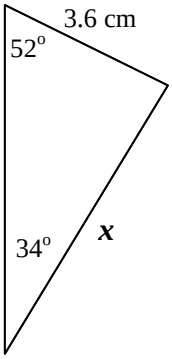
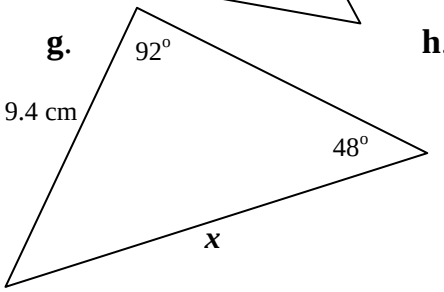


g.



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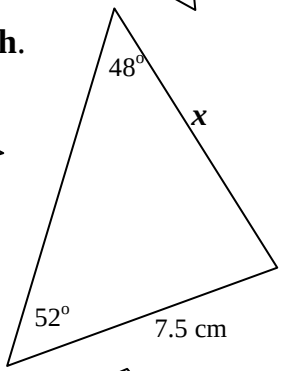
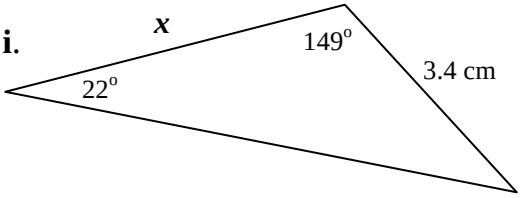


i.



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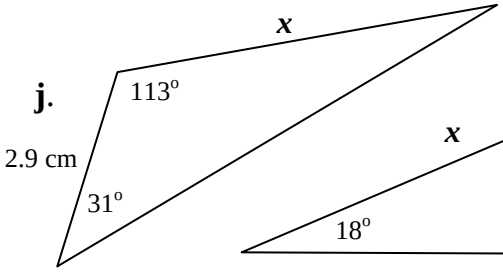
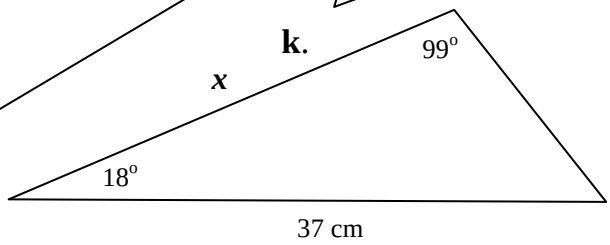
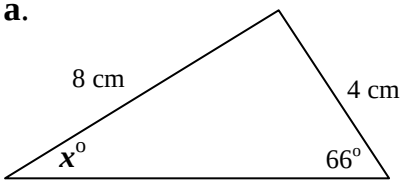


k.



Q2. Use the sine rule to calculate the length of the angle marked x^o in each of the triangles below.

a.



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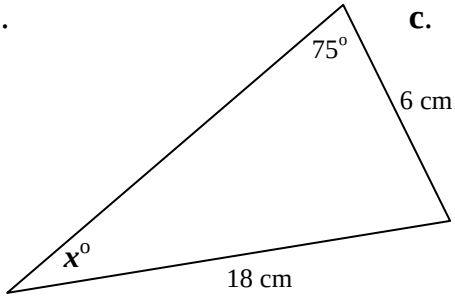

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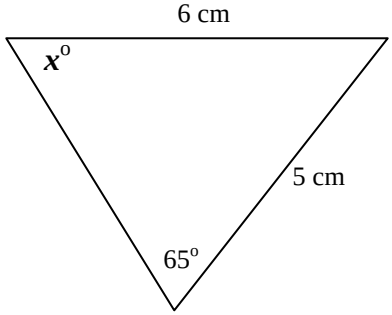

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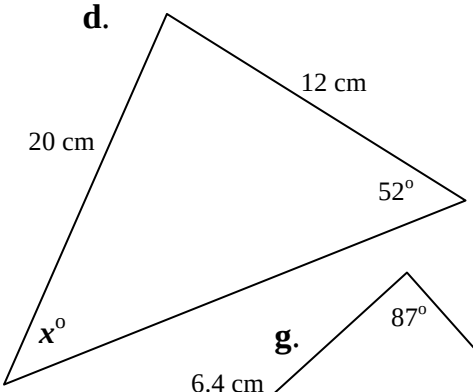
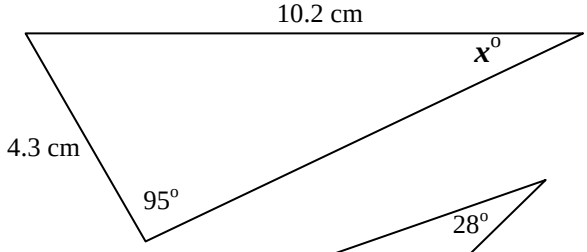


e.



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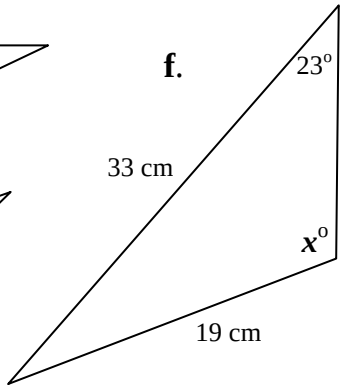
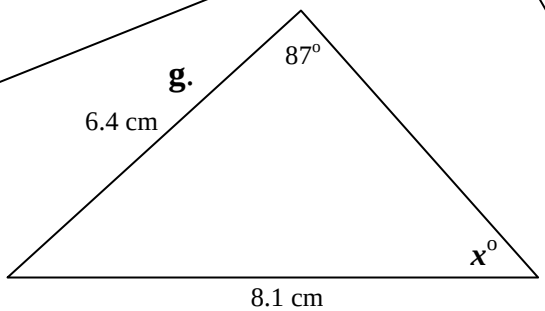
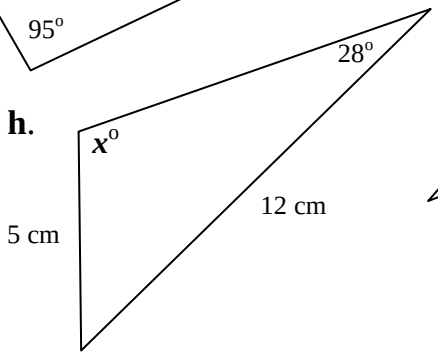


g.

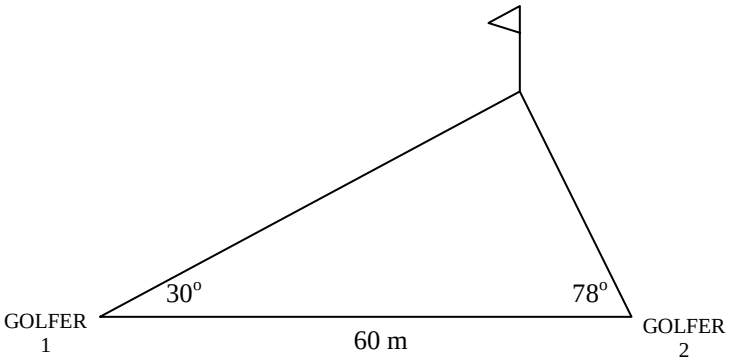


h.

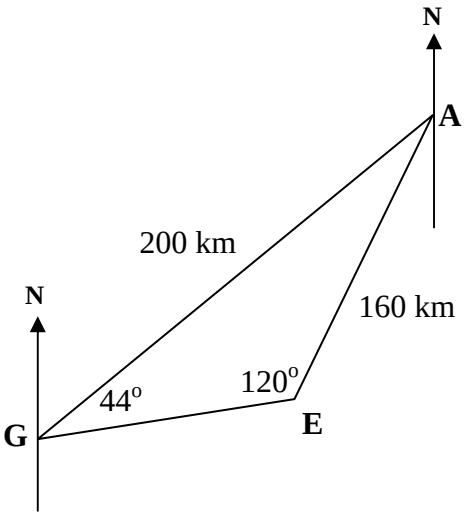


Q3. Two golfers are aiming for the green. The golfers are 60 m apart and the angles are as shown in the diagram.

What distance will each golfer have to hit the ball in order to reach the pin.



Q4.

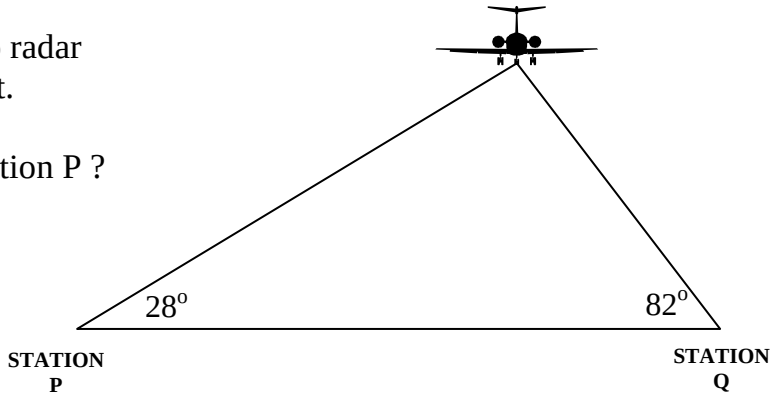


The diagram shows the path of an aircraft from Glasgow to Aberdeen to Edinburgh.

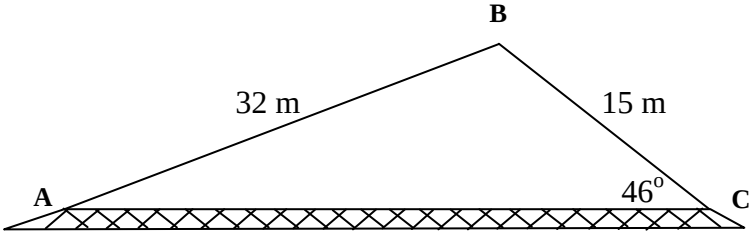
a. Write down the size of ∠GAE
b. Calculate the distance GE.

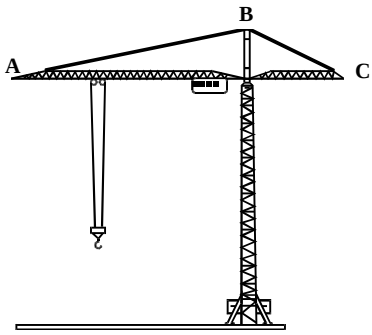
Q5. An aircraft is picked up by two radar stations, P and Q, 120 km apart.

How far is the aircraft from station P ?



Q6. A large crane is being used in the construction of a block of flats. The crossbeam is supported by two metal stays.



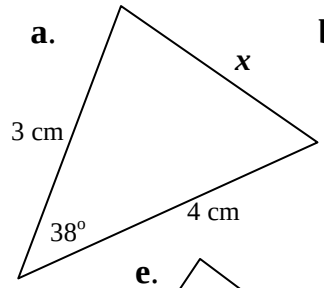


The length of AB is 32 m and the length of BC is 15 m. ∠BCA is 46°.
Calculate the size of ∠BAC and the length of the crossbeam AC.

Trigonometry ~ Cosine Rule

Q1. Use the cosine rule to calculate the length of the side marked ***x*** in each of the triangles below.

a.



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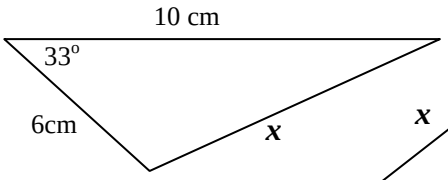
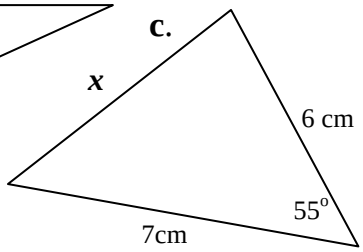


c.



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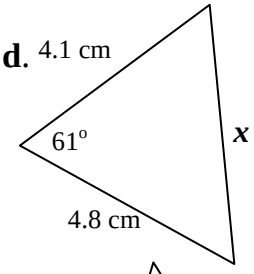

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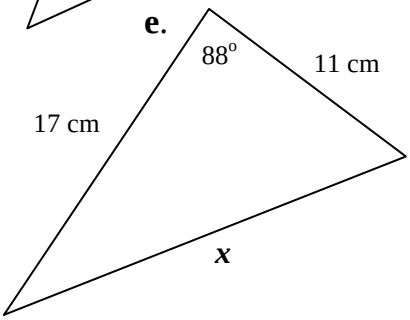

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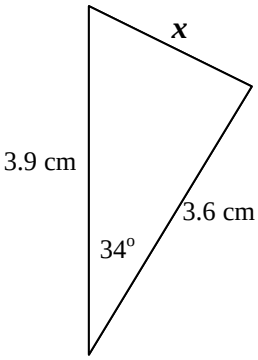

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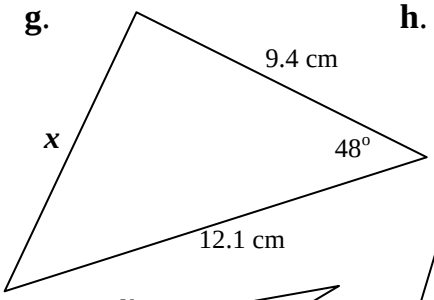

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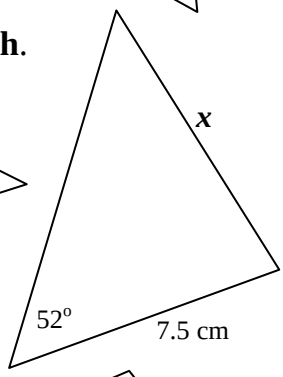
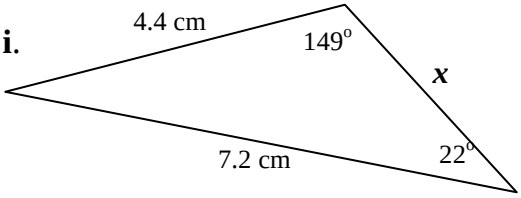


i.



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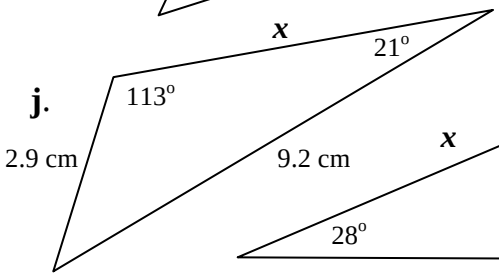

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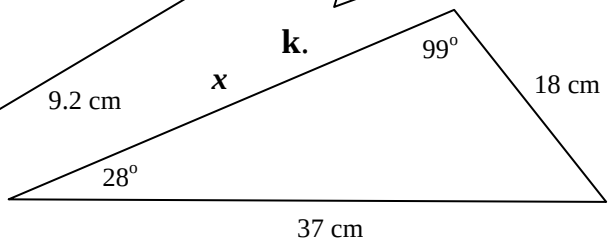
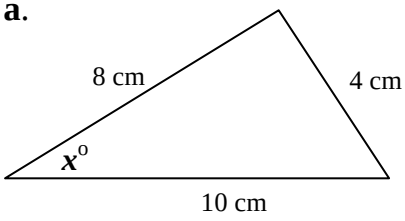


Q2. Use the cosine rule to calculate the angle marked x^o in each of the triangles below.

a.



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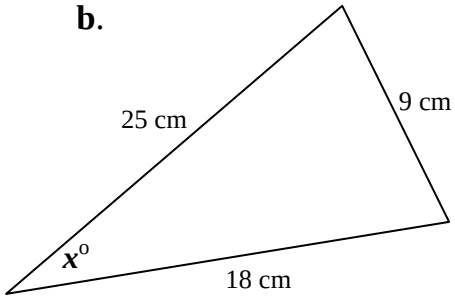

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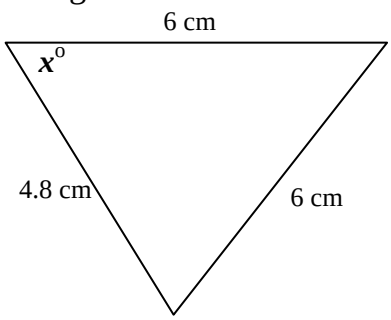

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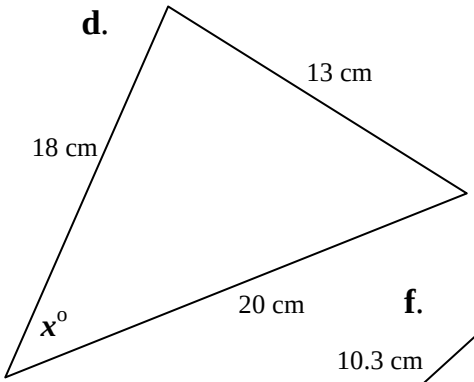
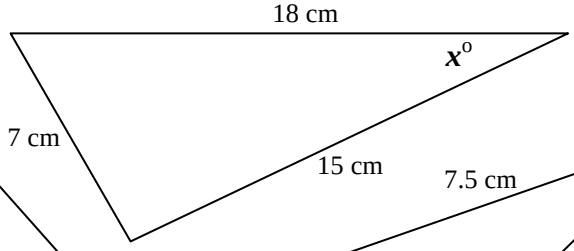


e.



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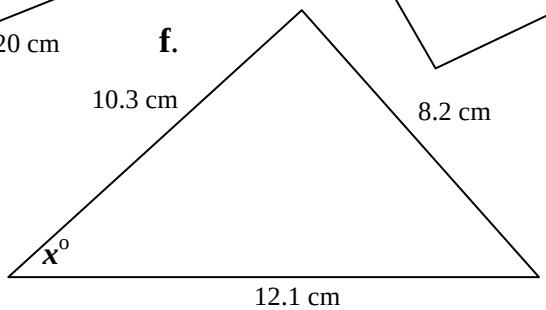

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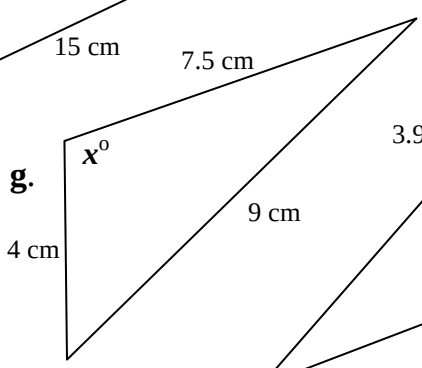

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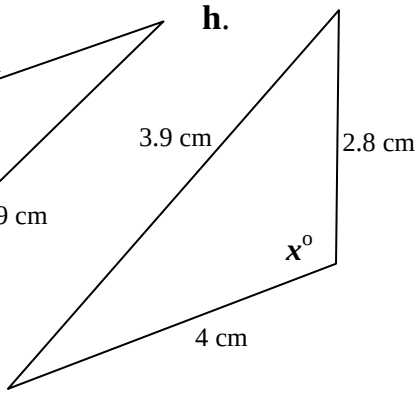
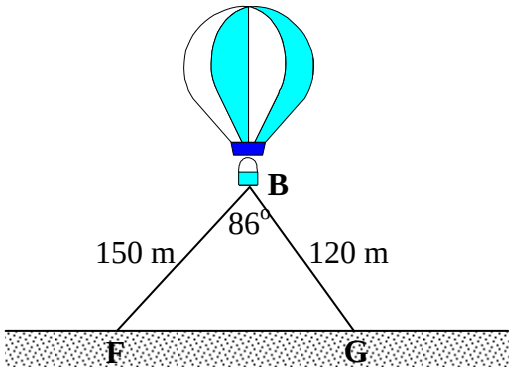
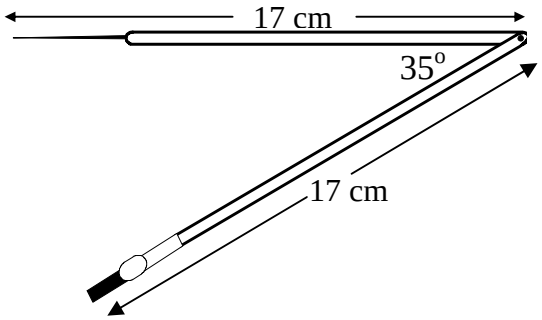


Q3. A hot air balloon B is fixed to the ground at F and G by 2 ropes 120m and 150 m long.

If $\angle FBG$ is 86^o, how far apart are F and G.



Q4.



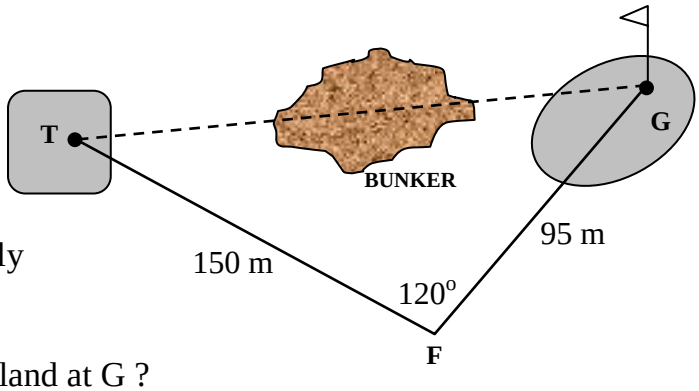
A set of compasses is shown where the angle between the arms is set at 35^o

Calculate the diameter of the circle which could be drawn with the arms in this position.

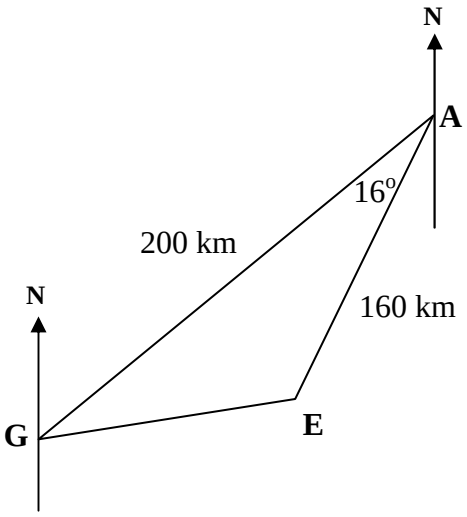
Q5. During a golf match, Ian discovers that he has forgotten his sand wedge, so to avoid the bunker he plays a shot from T to F and then from F to G.

His opponent Fred decides to play directly from T to G.

How far will Fred need to hit his shot to land at G ?



Q6.



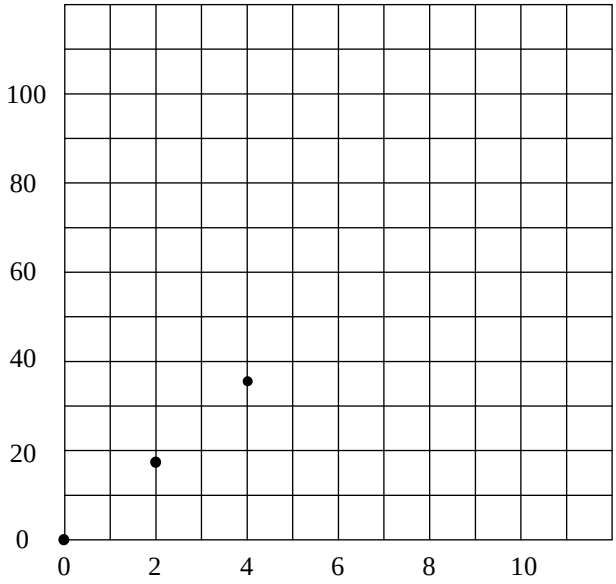
The diagram shows the path of an aircraft from Glasgow to Aberdeen, a distance of 200 km and then from Aberdeen to Edinburgh, a distance of 160 km.

Calculate the distance from Glasgow to Edinburgh.

Linear Relationships

Q1. The table shows the rate of exchange of £ sterling(P) to French Francs(F).

P	0	2	4	6	8	10
F	0	18	36	54	72	90



a. Copy and complete the graph.

b. Write an equation to describe the relationship in the form

F =

Q2. The cost (C) of hiring a van is £30 plus £1 per mile travelled (M).

M	0	10	20	30	40	50
C	30	40				

a. Copy and complete the table.

b. Draw a graph of the relationship.

c. Write an equation in the form C =

Q3. Mr. Sparkes, the electrician, charges £15 per hour (H) plus a £50 call out charge.

H	1	2	3	4	5	6
C	65	80				

a. Copy and complete the table.

b. Draw a graph of the relationship.

c. Write an equation in the form C =

Q4. The cost (C) of buying a music system is £25 deposit plus £28 per month for 6 months

a. Copy and complete the table.

number of months (M)	1	2	3	4	5	6
total amount paid (T)	53	81				

b. Draw a graph of the relationship.

c. Write an equation in the form T =

Simultaneous Equations 1 ~ Graphs

Q1. **a**. Copy and complete the tables below.

Table 1 : y = 9 – *x*

x	0	3	7
y		6	

Table 2 : y = *x* – 1

x	2	5	7
y	1		

b. Plot the points from table 1. Join them carefully with a straight line.
c. Plot the points from table 2 on the same graph. Join them with a straight line.
d. Write down the coordinates of the points where the lines cross.

Q2. **a**. Copy and complete the tables below.

Table 1 : y = 8 – *x*

x	0	3	7
y		5	

Table 2 : y = *x* – 2

x	2	5	7
y	0		

b. Plot the points from table 1. Join them carefully with a straight line.
c. Plot the points from table 2 on the same graph. Join them with a straight line.
d. Write down the coordinates of the points where the lines cross.

Q3. Repeat the questions above for

a. $y = 7 - x$ and $y = x - 1$
b. $y = 14 - x$ and $y = x - 8$
c. $y = x - 3$ and $y = 15 - x$
d. $y = x - 7$ and $y = 17 - x$
e. $y = 12 - x$ and $y = x - 4$
f. $y = 30 - x$ and $y = x - 10$
g. $y = 18 - x$ and $y = x - 12$
h. $y = 11 - x$ and $y = x - 5$
i. $x + y = 10$ and $x - y = 4$
j. $x - y = 9$ and $x + y = 17$

Q4. Find the value of x and y by drawing the graphs of the following pairs of equations.

a. $3y - x = 9$, $x + y = 11$
b. $2x - 3y = 6$, $x + 2y = 10$
c. $x + 2y = 10$, $2x + y = 8$

d. $x - 2y = -2$, $2x - y = 2$
e. $x - y = 7$, $3x - 2y = 24$
f. $3x + 2y = 6$, $x - 2y = 10$

g. $2y - x = 8$, $3y + x = 17$
h. $x + y = 2$, $2x - y = 4$
i. $x - 2y = 3$, $x + y = 0$

j. $2y - 3x = 0$, $x - y = -2$
k. $x - y = 2$, $2x + 3y = 4$
l. $x + y = 0$, $2x + 3y = 6$

m. $2x + 3y = 4$, $x - 2y = 9$
n. $3x - 2y = 3$, $x + y = -4$
o. $5x - y = 6$, $3x + 2y = 1$

Simultaneous Equations 2

Q1 Solve each of the systems of equations below using the method of substitution.

a. $y = x$ and $3x - y = 10$ **b**. $y = x$ and $5x - y = 4$

c. $y = 2x$ and $5x + y = 14$ **d**. $y = 2x$ and $2x + 3y = 24$

e. $y = 3x + 1$ and $y = x + 7$ **f**. $y = 5x - 4$ and $y = 2x + 11$

g. $2y = 5x - 12$ and $2y = x + 4$ **h**. $3y = 7x + 5$ and $3y = 10x - 7$

Q2. Solve each of the systems of equations below by first eliminating x or y.

a. $x + y = 4$, $x - y = 1$ **b**. $x + y = 9$, $x - y = 5$ **c**. $x + y = 7$, $x - y = 3$

d. $x + y = 1$, $x - y = 3$ **e**. $x + y = 3$, $x - y = 9$ **f**. $x + y = -1$, $x - y = 9$

g. $x + y = -5$, $x - y = -1$ **h**. $x + y = -14$, $x - y = -8$ **i**. $x + y = -18$, $x - y = 2$

Q3. Solve each of the systems of equations below.

a. $2x + y = 15$, $x - y = 6$ **b**. $3x + 2y = 32$, $x - 2y = 8$ **c**. $5x + 3y = 26$, $2x - 3y = 2$

d. $3x + y = 9$, $x + y = 5$ **e**. $4x + y = 11$, $2x + y = 5$ **f**. $7x + 2y = 36$, $2x + 2y = 16$

g. $2x - 5y = -21$, $3x + 10y = 56$ **h**. $3x + 8y = 23$, $x - 4y = 1$ **i**. $3x + 4y = 10$, $6x + 5y = 17$

j. $5x - 2y = 16$, $3x + 4y = 20$ **k**. $7x + 3y = -13$, $3x + y = -5$ **l**. $3x - 5y = 8$, $x - 7y = 8$

Q4. Solve each of the systems of equations below.

a. $5x + 2y = 9$, $2x - 3y = -4$ **b**. $4x + 5y = 7$, $7x - 3y = 24$ **c**. $5x + 2y = 14$, $4x - 5y = -2$

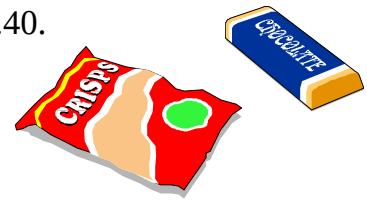
d. $3x + y = 16$, $2x + 3y = 13$ **e**. $8x - 3y = 19$, $3x - 2y = 1$ **f**. $5x + 3y = 19$, $7x - 4y = 43$

g. $2x - 5y = 21$, $3x + 2y = 3$ **h**. $2x - 3y = 17$, $7x - 4y = 40$ **i**. $8x + 2y = 23$, $5x + 6y = 31$

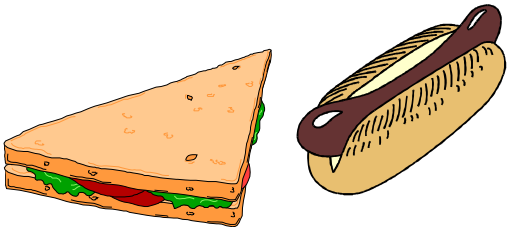
j. $2x + 3y = 7$, $4x + 5y = 12$ **k**. $7x + 2y = 11$, $6x - 5y = -4$ **l**. $7x - 5y = 35$, $9x - 4y = 45$

Simultaneous Equations 3

Q1. Four chocolate bars and six packets of crisps together cost £3.40.
Ten chocolate bars and three packets of crisps cost £4.90.
Form a system of equations and solve it to find the cost of each packet of crisps and each bar of chocolate.



Q2.



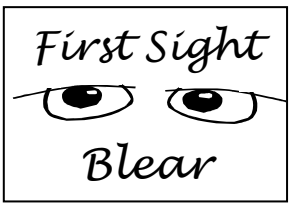
Four sandwiches and 3 hot-dogs cost £7.50.
Two sandwiches and 4 hot-dogs cost £6.
Form a system of equations and solve it to find the cost of each sandwich and hot-dog.

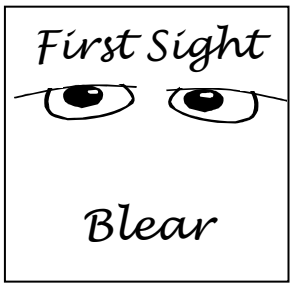
Q3. At *Smith's Stationers*, the cost of a ruler and a pencil together is 57p. The ruler costs 23p more than the pencil.
Find the cost of each.

Q4. Blear's new album is available at Your Cost record shops on CD and tape.

5 tapes and 4 CDs cost £97.
3 tapes and 3CDs cost £66

Calculate the cost of the tape and of the CD.

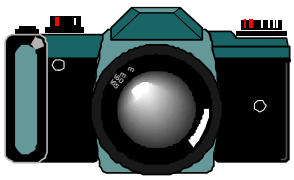




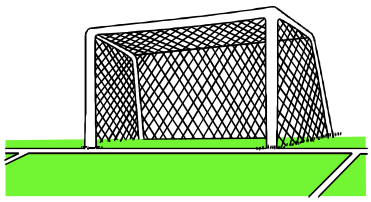
Q5. A photographer produces 2 sizes of print, Standard and Jumbo.

A customer who orders 24 standard and 5 jumbo prints pays £7.79
Another customer pays £8.60 for 20 standard and 8 jumbo prints.

How much would I have to pay for 1 standard and 1 jumbo print ?



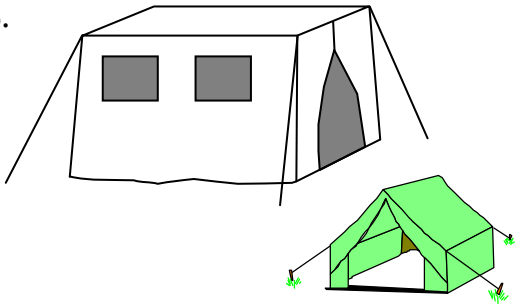
Q6. There are 2 types of ticket on sale for a football match – Side Stand and Centre Stand.
You are sent to buy tickets for various members of your family and you pay £71.75 for 4 Side and 3 Centre tickets.
Your friend pays £75.25 for 2 Side and 5 Centre tickets.
What is the price for each type of ticket ?



Q7. Two small glasses and five large glasses together contain 915 ml.
One small glass and three large glasses together hold 530 ml.

How much does each glass hold ?

Q8.



On a camping holiday a group of 30 students takes 3 frame tents and 2 ridge tents.

Another group of 25 students takes 2 frame tents and 3 ridge tents.

How many people does each type of tent hold ?

Q9. A magazine pays different rates for ***Star Letters*** and ***Readers' Letters***.
In June the magazine editor paid out £195 for 3 Star Letters and 8 Readers' Letters.
In July £215 was paid out for 2 Star Letters and 11 Readers' Letters.

How much does the magazine pay for each type of letter ?

Q10. Brian is a potter and is making 2 different sizes of vase.
Five small vases and four large ones require 17 kg of clay.
Three small vases and two large vases take 9.4 kg of clay.

How much clay is needed for each size of vase ?

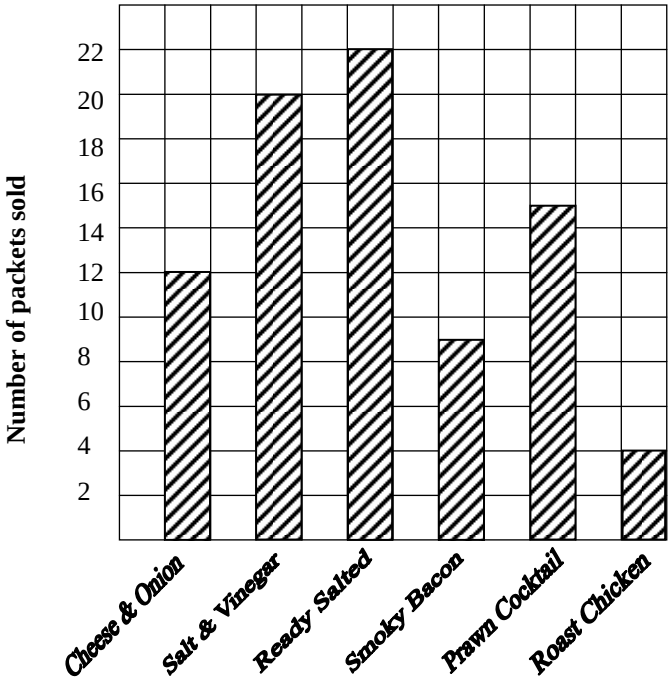
Q11. Karen is in charge of ordering the lunches in the office she works for.
She keeps a note of what she orders and the total costs.

She thinks she has been wrongly charged on one of the days.
By forming and solving pairs of equations, find out if she is correct.

	Burger Meals	Chicken Meals	Total Cost(£)
Monday	7	8	29.70
Tuesday	3	12	30.30
Wednesday	8	3	21.35
Thursday	4	7	20.85
Friday	6	6	23.70
Saturday	5	10	30.00

Graphs, Charts and Tables ~ Revision

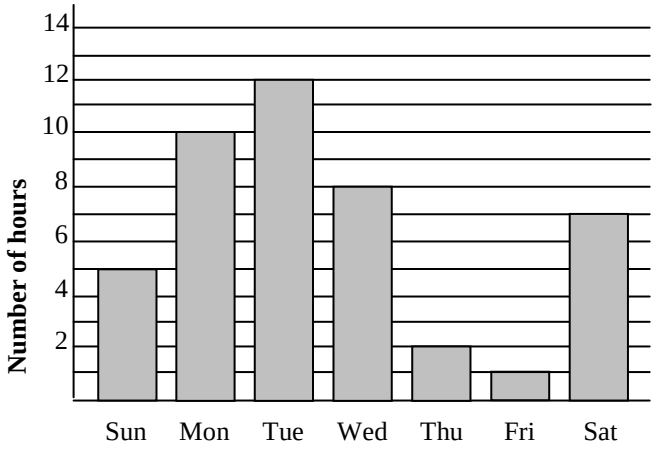
Q1. A school tuck shop records how many packets of each flavour of crisps it sells each day. The results for Monday are shown in the bar graph below.



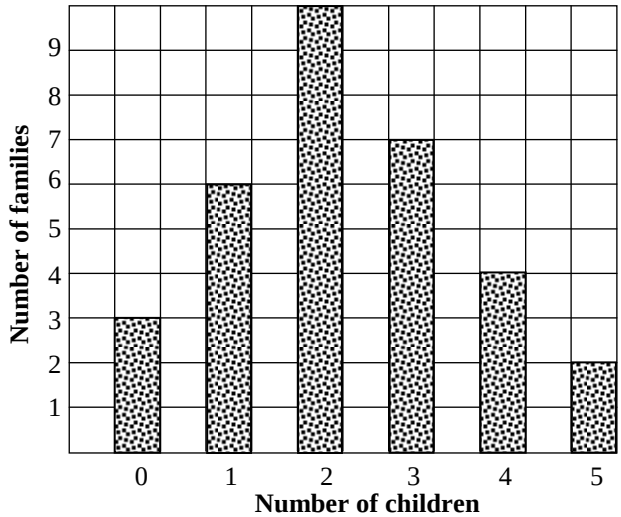
a. How many flavours of crisps does the tuck shop sell ?
b. What is the most popular flavour ?
c. What was the total number of packets sold ?
d. What is the least popular flavour ?
e. List the flavours in order from the most popular to the least popular.

Q2. The bar chart shows the number of hours of sunshine for a week in April.

a. Which day was the sunniest ?
b. Which day had 8 hours of sunshine ?
c. What was the total number of hours of sunshine over the weekend (Saturday & Sunday) ?



Q3.



A number of families in an estate were asked about the number of children in the family. The results are shown in the bar chart.

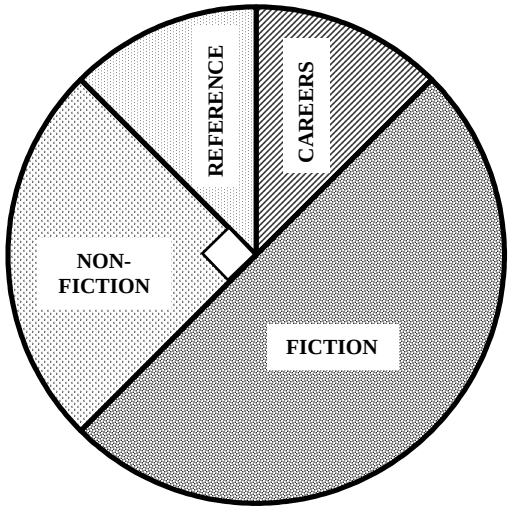
a. How many families had 3 children ?
b. How many had no children ?
c. How many had more than 3 children ?
d. How many families were asked ?

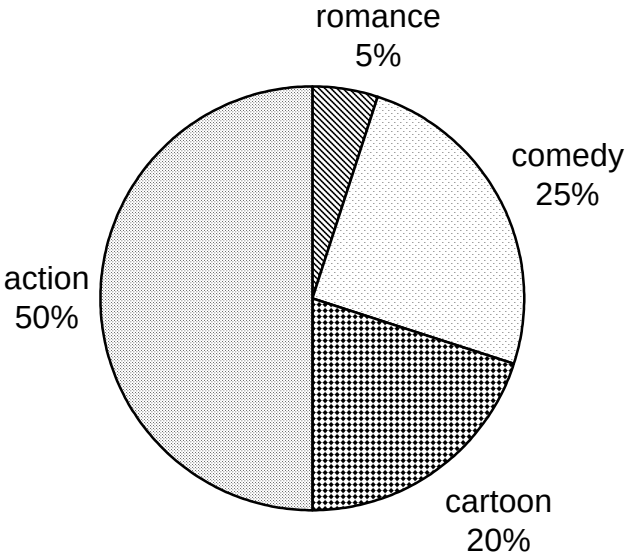
Q4. 1200 books in the school library are classified in four categories.

a. What fraction of the books are
- **i**. fiction
- **ii**. non-fiction
- **iii**. reference
- **iv**. careers ?

b. How may non-fiction books are there ?

c. How many careers books are there ?





Q5. The 40 films on TV over a holiday weekend can be put into 4 categories.

a. What fraction of the films were
- **i**. comedy
- **ii**. action
- **iii**. romance
- **iv**. cartoon ?

b. Which category had the most films?

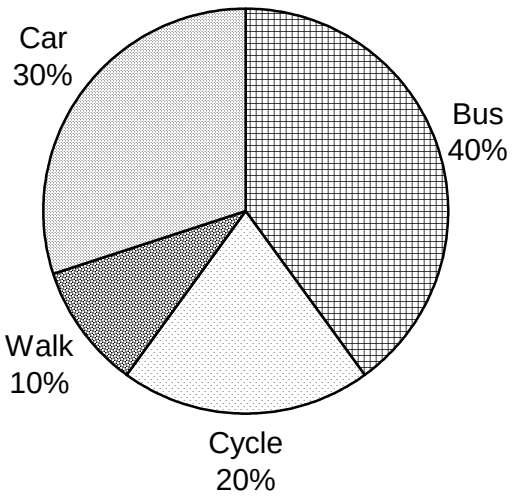
c. How many comedy films were there?

Q6. A class of 30 pupils was asked about how they travelled to school.

a. What fraction
- **i**. walked
- **ii**. came by bus
- **iii**. came by car
- **iv**. cycled?

b. What was the least popular method of travel?

c. How many came by bus?

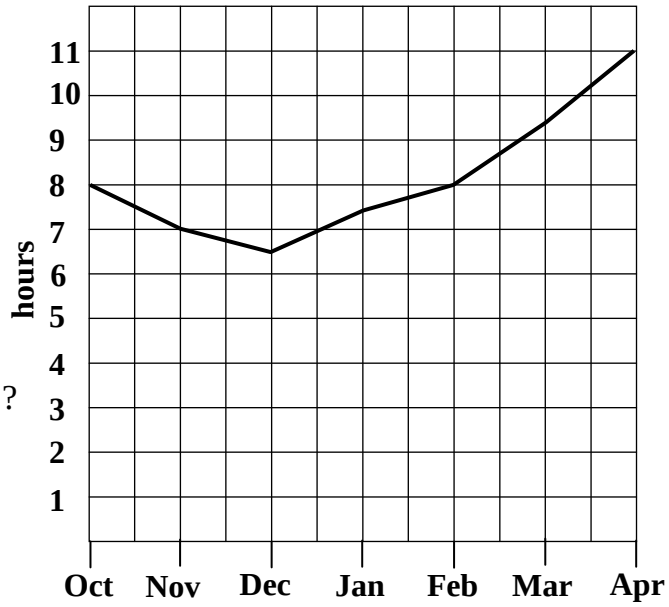


Q7. The line graph shows the average daily hours of sunshine in a holiday resort in the low season.

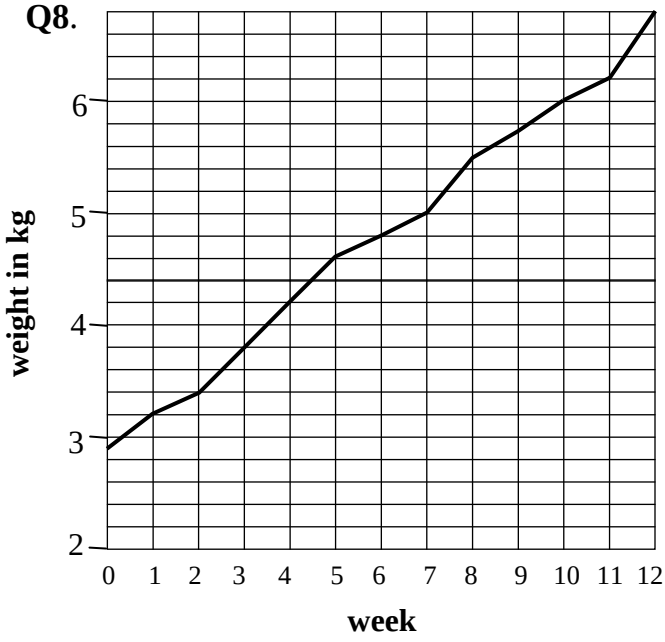
a. Which month has the least hours of sunshine ?

b. What is the average daily hours of sunshine in **i**. December
ii. April ?

c. How many more hours of sunshine are there in March than in November ?



Q8.



The graph shows the increase in a baby's weight over its first few weeks.

a. What was the baby's birth weight ?

b. What did it weigh after
i. 5 weeks
ii. 9 weeks
iii. 12 weeks

c. How much weight did the baby put on between week 3 and week 7 ?

d. Between which 2 consecutive weeks was the greatest increase in weight ?

Q9. The stem-and-leaf tables show the marks of a class of pupils in two maths tests.

paper 1

2	2
3	0 3
4	0 2 4
5	1 1 1
6	2 5 5 6
7	0 0 1 5 5
8	1 3 3 4 6 8
9	0 1 1 4 5

paper 2

2	0 1 3
3	0 2 3 4
4	1 1 3 5 5
5	2 4 5 5 8 8 9
6	0 1 4 5
7	1 3 5
8	3 7
9	0

a. Which paper did the pupils do better in ?

b. Find the median and the range for each paper.

Q10. The table below shows the destination of a class of pupils going on holiday.

Country	Scotland	England	Spain	France	Italy	USA
Number of pupils	3	5	12	4	2	4

Draw a bar graph to illustrate the data.

Q11. Shown below are the weights, in kilograms, of a group of first year boys.

39	42	48	38	51	44
42	51	53	42	47	39
38	45	43	51	47	57
42	44	38	43	48	50
42	41	52	49	39	46

Show this information on a stem-and-leaf diagram.

Q12. A traffic survey is conducted at a road junction to find the number of people travelling in each car between 8am and 9 am.

Number of people in car	1	2	3	4	5	6
Number of cars	10	15	11	6	2	1

Show this information on a bar chart.

Q13. The table shows a patient's temperature, in ^{o}C, taken at 2-hourly intervals for a 24 hour period.

Time	0000	0200	0400	0600	0800	1000	1200	1400	1600	1800	2000	2200
Temp	38.0	38.2	37.8	37.8	37.5	37.4	37.4	37.6	36.8	37.0	37.1	37.0

Draw a line graph to show the temperature over 24 hours..

Q14. The number of customers using a restaurant over a period of 40 days is shown below.

31	37	41	77	60	38	20	59	8	48
22	10	63	12	25	50	64	36	80	37
55	42	61	39	15	44	49	28	26	85
62	52	48	57	45	50	21	9	33	27

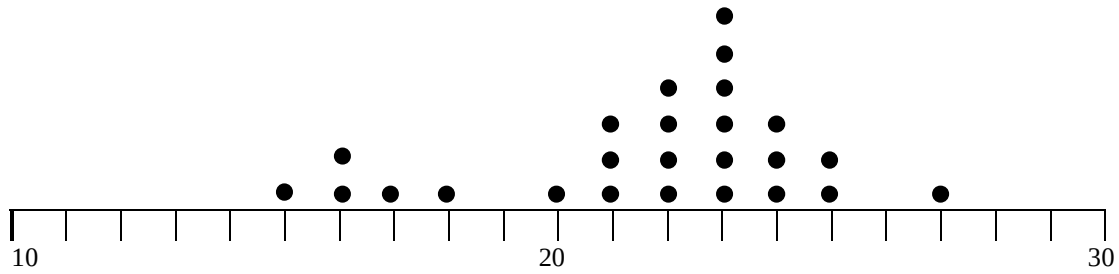
Show this information in a stem and leaf chart.

Graphs, Charts and Tables ~ Dot Plots

Q1. Show each of the following data sets on a dot plot.

a.	10	18	18	18	13	16	18	15	17	18	19	17	20	19
b.	1	4	1	3	6	5	1	1	2	2	3	4	3	6
c.	20	60	90	100	30	60	30	90	60	40	40	50	70	90
d.	53	51	58	56	53	61	54	57	59	58	57			
	60	54	57	59	52	62	58	53	57	55	60			
e.	125	133	126	127	131	128	124	127	131	133	125	130		
	132	131	127	125	128	133	129	133	127	129	126	125		
f.	90	94	95	92	89	98	97	93						
	94	92	92	94	97	94	88	93						
g.	319	310	316	320	315	313	316	316	320	315				
	320	314	313	319	316	317	316	312	313					
h.	5	11	15	7	11	16	13	9	12	9	11	13		
i.	33	37	32	45	35	41	45	39	40	44	47	35	39	41
j.	1.75	1.76	1.79	1.83	1.74	1.87	1.85	1.83	1.87	1.81	1.86	1.71	1.85	1.75
	1.81	1.76	1.71	1.85	1.79	1.84	1.76	1.85	1.84	1.81	1.79	1.75	1.82	1.79

Q2. A supermarket sells packs of strawberries. A spot check was carried out on 25 packs. The results of the inspection are shown in the dot plot.



a. What is the least number of strawberries in a pack ?
b. What is the greatest number of strawberries in a pack ?
c. Which amount occurred most often ?
d. Is the distribution symmetric, skewed or widely spread ?

Q3. A die is thrown 30 times and the results noted.

‘

1	3	1	2	6	3	2	5	5	4
2	1	3	1	5	5	6	6	6	3
5	4	1	3	5	4	4	2	2	5

Show these results on a dot plot.

Graphs, Charts and Tables ~ Pie Charts

Q1. A survey was carried out in which 60 people were asked to name their favourite radio station. The results were

Clyde 1	24	**Clyde 2**	8	**Radio 1**	14
Radio 2	5	**Scot fm**	9		

a. Copy and complete the table

b. Draw the pie-chart.

Station	**Number of people**	**Angle in piechart**
Clyde 1	24	$\frac{24}{60}\times 360 = 144^o$
Clyde 2	8	$\frac{8}{60}\times 360 =$
Radio 1	14	$\frac{14}{60}\times 360 =$
Radio2	5	$\frac{5}{60}\times 360 =$
Scot fm	9	$\frac{9}{60}\times 360 =$

Q2. Draw a pie-chart for each of the data sets below.

a. 90 people were surveyed to find the most popular flavour of crisps

Flavour	ready salted	cheese & onion	smoky bacon	salt & vinegar	prawn cocktail	roast chicken
Number of people	23	28	11	18	7	3

b. 120 people were asked about the newspapers that they buy each day.

Newspaper	Daily News	The Moon	The Reporter	None
Number of people	35	42	26	17

c. 240 pupils were asked to choose their favourite sport.

Sport	football	basketball	tennis	swimming	hockey
Number of pupils	80	64	32	48	16

d. A professional photographer took 144 photographs of the types shown below

Type of photo	Baby	Wedding	Portrait	Adverts	News
Number of photographs	48	60	10	18	8

Graphs, Charts and Tables ~ Box Plots

Q1. For each data set, write down the minimum, maximum, median, upper and lower quartiles and draw a box plot.

a.	19	27	12	30	8	31	25						
b.	4	7	10	2	6	4	14	8	15				
c.	4.0	2.9	5.3	1.8	4.0	4.7	2.8	1.8	5.2	4.0	5.1		
d.	18	11	12	11	16	20	10	15	13	14	15		
e.	51	58	53	51	52	55	53	50	54	53	52		
f.	249	265	254	267	270	279	252	268	258				
g.	82	90	97	85	105	86	96	104	108	94	96		
h.	40	43	41	41	40	50	40	44	80	40	41	40	
i.	0.1	0.8	0.3	0.2	0.2	0.5	0.3	0.1	0.4	0.3	0.2		
j.	29	25	13	39	29	26	18	18	33	31	19	30	26

Q2. Here are two sets of marks for a French test.

Class 5A	98	94	92	78	88	78	82	98	68	66
	100	96	84	86	84	94	86	92	82	100

Class 5B	73	95	80	72	85	90	91	88	91	93
	83	76	93	75	88	94	88	91	91	75

Draw a box plot for each class and compare the results.

Q3. A company that manufactures shoelaces spot checks the length (in cm) of the laces. Here are the results for two different production lines.

Line A	26.8	27.2	26.5	27.0	27.3	27.5	26.1	26.4	27.9	27.3
Line B	26.8	26.7	27.1	27.0	26.9	27.0	27.3	26.9	27.0	27.3

Draw a box plot for line A and line B.
Which is the better production line ? (Give a reason for your answer)

Q4. Two sixth year classes take part in a Sponsored Fast for Famine Relief. The number of hours each pupil lasted are shown below.

6C1	20	22	21	20	22	20	22	20	20	24	21	22	23	22	22	23
6C2	15	20	24	23	22	24	18	24	22	23	24	17	20	24	24	20

Show each class on a box plot and comment on any differences.

Statistics 1~ Mean, Median, Mode (revision)

Q1. Find the mean, median, mode and range for each of the following data sets.

a.	7	8	9	10	12	12	12	13	13	13	13		
b.	50	51	51	51	51	52	52	53	53	53	53		
c.	0.4	2.1	3.6	4.8	5.3	5.3	5.5	5.7	6.0				
d.	7	9	10	11	12	14	14	15	16				
e.	6	8	11	12	14	15	15	17	21	22	24		
f.	8	10	11	12	14	14	15						
g.	0.31	0.34	0.35	0.38	0.40	0.42	0.43	0.43	0.45				
h.	2	3	3	3	5	5	5	5	6	6	7	7	8

Q2. Find the mean, median, mode and range for each of the following data sets. (Remember to write the numbers in order before finding the median)

a.	7	6	3	11	8	7	10	4	7				
b.	1	3	11	4	9	15	7	2	6	3	5		
c.	2.0	2.5	3.3	1.7	2.2	2.7	1.9	2.2	2.9	1.5	2.4		
d.	85	81	80	89	88	81	85	86	81	90			
e.	4	2	3	1	2	4	3	2	1	2	2	3	2	4
f.	1.2	0.8	2.0	0.9	0.8	0.6	1.1	2.2	1.2	0.8	0.9	1.9		
g.	332	308	340	325	336	341	319	324	317	306	308	320		
h.	8.8	12.4	15.2	10.3	11.9	9.7	20.0	16.9	9.7	17.1				

Q3. Mr. Khan timed how long it took each of his class to complete an exercise. The times are in seconds.

300	480	216	311	419	333	281	295	308	276
402	343	398	290	364	378	399	294	401	300

Calculate the mean and the median.

Q4. The weights, in kilograms, of 20 new-born babies are shown below.

2.8	3.4	2.8	3.1	3.0	4.0	3.5	3.8	3.9	2.9
2.7	3.6	2.5	3.3	3.5	4.1	3.6	3.4	3.2	3.4

Find the median, mode and range.

Q5.

number of people in flat	frequency
1	3
2	5
3	12
4	3
5	1
Total	24

The frequency table shows the results of a survey conducted in a block of flats to find out how many people were living in each house.

a. Use the table to calculate the mean, median and range.

b. What is the modal number of people in a flat ?

Q6. The absences of a class of 30 first year pupils were recorded over a term.

a. How many pupils had 100% attendance ?

b. Calculate the mean number of absences.

c. Write down the mode and the median.

number of absences	frequency
0	6
1	5
2	1
3	10
4	5
5	1
6	1
7	1
Total	30

Q7. The table shows the marks out of 10 achieved by pupils in a class test.

mark	0	1	2	3	4	5	6	7	8	9	10	*total*
frequency	1	0	1	3	3	2	3	5	7	4	3	32

Calculate the mean, median and mode.

Q8. A passage was picked at random from a book and the number of letters in the first 100 words were counted.

letters	1	2	3	4	5	6	7	8	9	10
frequency	4	12	30	24	17	5	2	3	3	1

Calculate the mean, median and mode.

Statistics 2 ~ Mean & Standard Deviation

Q1. Calculate the mean and standard deviation for the following sets of data.

a.	20	21	19	22	21	20	19	20	21	20	
b.	303	299	306	298	304	307	299	302	305	299	300
c.	15.3	14.9	15.1	15.2	14.8	14.7	15.1	14.8	15.0	15.0	
d.	87	89	84	88	89	87	86	87	86	87	
e.	48	73	29	82	54	43	95	41	92	71	
f.	4.4	4.6	4.8	4.0	4.2	4.3	4.5	4.7	4.9	4.1	
g.	0.2	0.3	0.4	0.2	0.2	0.0	0.4	0.1	0.2	0.3	
h.	40	40	39	38	38	40	40	42	40	39	

Q2. A third year pupil conducting an experiment with a die got the following results

6	1	1	4	4	2	2	6	5	6
1	1	1	5	1	4	2	3	4	6
1	4	4	1	5	4	4	3	6	2
5	3	5	6	3	2	6	5	5	2
3	1	4	5	2	4	1	4	4	3

a. Show these results in a frequency table
b. Use your table to calculate the mean and standard deviation.

Q3. An assistant in a shoe shop was asked to do a stock check on the numbers of different sizes of ladies shoes sold that week.

4	3	5	4	4 ½	4	5 ½	4 ½	4	3
5	6	4 ½	5 ½	4 ½	5	6 ½	5	6 ½	5
3 ½	5	5	4 ½	6	4	5	4	4 ½	3 ½
5 ½	4 ½	5	4	5	5 ½	4 ½	6 ½	6	4 ½
5	5 ½	5	5	4 ½	6 ½	5 ½	7	5 ½	4 ½
4	6	3 ½	4	5 ½	4	5	4 ½	3 ½	5 ½
4	6	3 ½	6	5 ½	5	5	7	5	7
4 ½	6 ½	6	5 ½	5	6	7	5 ½	4 ½	5
6	4 ½	6	5	4	4 ½	4	4	5	4 ½
4	5	3	5 ½	6 ½	4	4 ½	5	5 ½	4 ½

Draw a frequency table and calculate the mean and standard deviation.

Q4. A company that manufactures shoelaces spot checks the length (in cm) of the laces. Here are the results for two different production lines.

Line A	26.8	27.2	26.5	27.0	27.3	27.5	26.1	26.4	27.9	27.3
Line B	26.8	26.7	27.1	27.0	26.9	27.0	27.3	26.9	27.0	27.3

Calculate the mean and standard deviation and comment on any differences between line A and line B.

Q5. The running times, in minutes, of films shown on television over a week are as follows.

110	95	135	70	100	125	140	105	95	105
95	95	110	90	110	100	125	105	90	120
125	120	100	130	90	75	100	105	105	110
130	115	85	120	90	75	100	110	105	100
110	105	105	115	100	90	120	80	105	100

Construct a frequency table to help you calculate the mean and standard deviation.

Q6. The temperatures, in ^{o}C, at a seaside resort were recorded at noon over a 30-day period.

19	20	19	17	21	18	19	24	25	28
25	23	18	19	18	20	18	17	20	22
22	23	25	27	25	24	22	22	20	17

Make a frequency table and use it to help find the mean and standard deviation.

Q7. John James plays golf with his brother Joe each month. They keep a note of their score cards.

John	74	73	74	73	71	73	72	75	73	73	72	73
Joe	68	74	70	67	80	81	69	68	79	67	70	71

Calculate the mean and standard deviation and comment on John's and Joe's performance over the year.

Q8. The weekly takings in small store, to the nearest £, for a week in December and March are shown below

December	2131	2893	2429	3519	4096	4810
March	1727	2148	1825	2397	2901	3114

Calculate the mean and standard deviation and comment on any differences.

Q9. Two sixth year classes take part in a Sponsored Fast for Famine Relief. The number of hours each pupil lasted are shown below.

6C1	20	22	21	20	22	20	22	20	20	24	21	22	23	22	22	23
6C2	15	20	24	23	22	24	18	24	22	23	24	17	20	24	24	20

Calculate the mean and standard deviation for each class and comment on how well each class did.

Statistics 3~ Median and Quartiles

Q1. For each of the data sets below find the median, lower quartile, upper quartile and semi-interquartile range.

a.	2	4	4	6	7	8	10	14	15			
b.	29	30	32	33	34	37	40					
c.	17	19	20	22	23	25	26					
d.	0	0	0	1	1	2	2	2	3	3	4	
e.	1.8	1.8	2.8	2.9	4.0	4.0	4.0	4.7	5.1	5.2	5.3	
f.	0.13	0.18	0.18	0.19	0.25	0.26	0.29	0.29	0.30	0.31	0.33	0.39
g.	133	136	136	138	140	141	143	145				
h.	371	375	376	379	380	384	385	387	389	390		
i.	57	58	58	60	63	67	67	69	82	85	86	90
j.	11	11	11	12	13	14	15	15	16	18	20	

Q2. For each of the data sets below find the median, lower quartile, upper quartile and semi-interquartile range

a.	47	56	58	48	60	65	50	52	61	53	63	
b.	12	20	27	15	35	16	26	34	38	24	26	
c.	149	165	154	167	170	179	151	168	158			
d.	1	8	3	1	2	5	3	1	4	3	2	
e.	108	114	132	95	144	120	116	125	172	188	155	160
f.	65	74	59	43	63	52	48	63	67	85	92	48
g.	190	165	174	187	166	172	184	190	166	183	180	
h.	325	363	347	359	314	329	364	372	301	317	346	
i.	0.5	1.3	0.4	1.0	0.9	1.4	0.8	0.9	1.1	0.6		
j.	10	13	11	11	20	10	10	14	50	10	11	10

Q3. A class of pupils noted the number of brothers and sisters they each had

0	3	0	1	0	1	1	3
2	3	3	2	1	5	0	1
4	1	2	2	2	2	1	2

a. Show the results on a frequency table
b. Add a cumulative frequency column to your table.
c. Find the median and quartiles.

Q4. The table below shows the marks out of 10 gained by pupils in a class test.

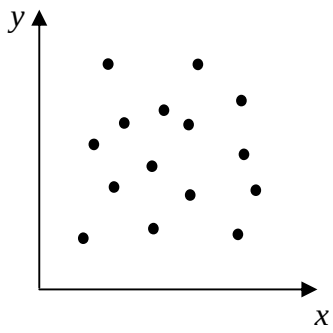
mark	0	1	2	3	4	5	6	7	8	9	10
frequency	1	0	1	3	3	2	3	5	7	4	3

Add a cumulative frequency column and use it to find the median and quartiles.

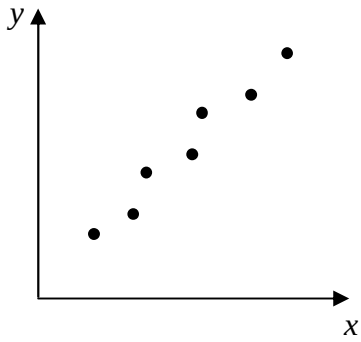
Statistics 4~ Scattergraphs & Correlation

Q1. Using the words positive, negative or no relation, describe the correlation in each of the diagrams below.

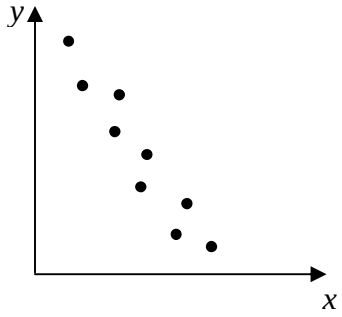
a.



b.

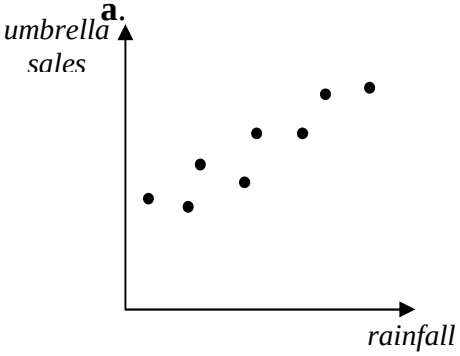


c.

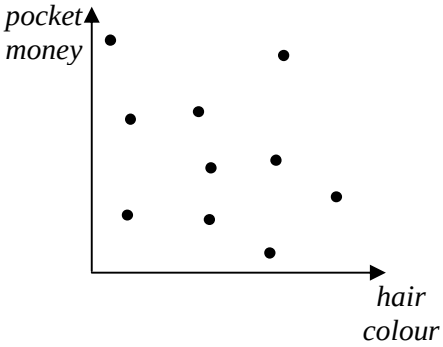


Q2. What do the diagrams tell you about the correlation between the two variables involved ?

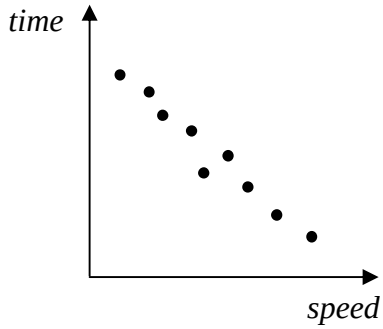
a.



b.



c.



Q3. A random survey of 20 pupils gave the following results

Pupil	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Age	16	17	14	17	14	12	12	16	18	15
Height(cm)	182	199	171	200	183	159	170	179	198	180
Weight (kg)	71	78	69	66	54	60	46	72	76	63
Cash carried (£)	4.23	10.90	25.50	1.43	2.98	6.24	3.18	0.72	1.98	0.25

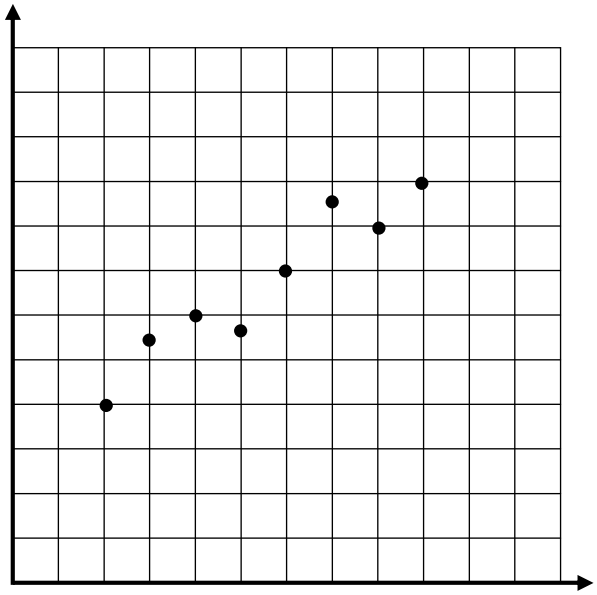
Pupil	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Age	18	18	17	16	11	11	13	12	14	14
Height (cm)	190	179	187	169	160	151	150	171	170	182
Weight (kg)	68	75	77	76	49	41	55	53	60	67
Cash carried (£)	12.06	4.31	2.38	12.30	2.15	4.12	2.71	0.40	1.80	3.10

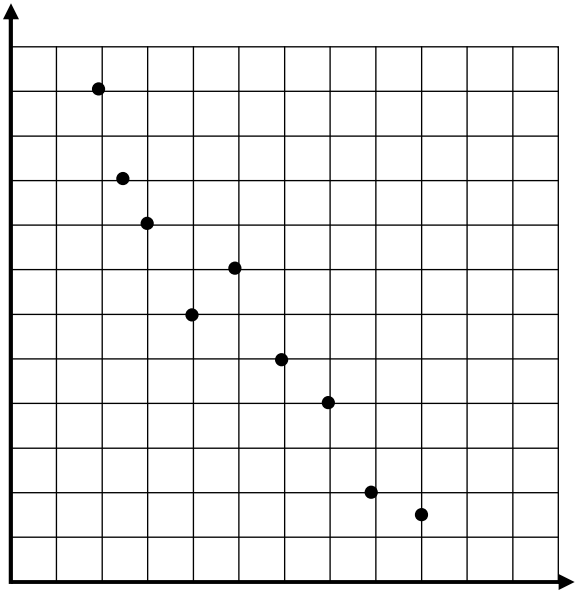
Draw a scatter diagram to find out if there is a correlation between

a. age and height
b. height and weight
c, age and weight
d. age and amount of cash carried.

Statistics 5~ Regression (best fit line)

Q1. Copy these graphs and use your ruler to draw what you think is the line of best fit.





Q2. For the following sets of data, draw a scatter diagram and find the equation of the line of best fit.

a.

x	1	2	3	4	5
y	5	7	8	10	12

b.

x	1	2	3	4	5
y	2	2.5	2.5	3.5	3

c.

x	6	7	8	9	10
y	1	2	4	4.5	6

d.

x	1	2	3	4	5
y	8	6	5	4	2

e.

x	1	2	3	4	5
y	8	10	8	5	3

f.

x	5	6	7	8	9
y	6	5.5	5.4	5.5	5

Q3. The height of a plant measured over five days is shown below.

Days (D)	1	2	3	4	5
Height (H)	1.6	1.9	2.5	3.4	3.5

a. Plot the points and draw the best fitting straight line through them
b. Work out the equation of the line.
c. Use your line to estimate the height after 1½ days.

Q4. The table shows the results of an experiment.

x	1	2	3	4	5	6
y	9.2	12.0	18.3	19.0	25.1	30.2

Plot the points, draw a best fitting straight line and find its equation.

Q5. The results below show the length of a spring when a force is applied.

Force (F)	1	2	3	4	5	6
Length (l)	3.0	3.9	4.8	5.9	6.9	8.1

a. Plot the points and draw the best fitting straight line through them.
b. Find the equation of the line.
c. Use your graph to estimate the length when a force of 4.5 is applied.

Q6. The following table gives the temperature of a bottle of water as it cools.

Time, min (T)	1	3	5	7	9
Temperature (^oC)	66	61	57	53	50

a. Plot the points and draw the best fitting straight line through them.
b. Find the equation of the line.
c. Use your graph to estimate the temperature after 2½ minutes.

Q7. The following table shows the speed of a car accelerating from rest.

Time (secs)	0	2	6	8	12	16
Speed (mph)	0	14	44	56	82	110

a. Plot the points and draw the best fitting straight line through them.
b. Find the equation of the line.
c. Use your graph to estimate the speed after 10 seconds.

Q8. A restaurant manager finds that the cost of running his restaurant depends on the number of meals served.

Number of meals	10	20	30	40	50	60
Cost in £	188	192	220	216	232	248

a. Plot the points and draw the best fitting straight line through them.
b. Find the equation of the line.
c. Use your equation to estimate the cost when 35 meals are served.

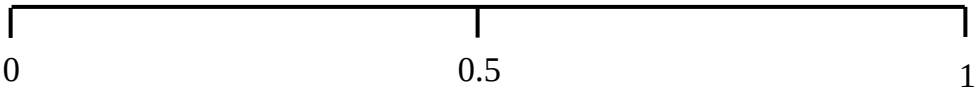
Q9. The results of an experiment are shown in the table below.

V	0	0.35	0.6	0.95	1.2	1.3
R	0.60	0.48	0.33	0.18	0.11	0.05

a. Plot the points and draw the best fitting straight line through them.
b. Find the equation of the line.
c. Use your graph to estimate ***R*** when ***V*** is 0.8.

Statistics 6~ Probability

Q1. **a**. Copy this probability line

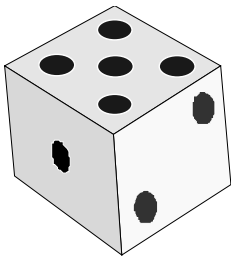


b. Mark with an arrow where you think the probability is that

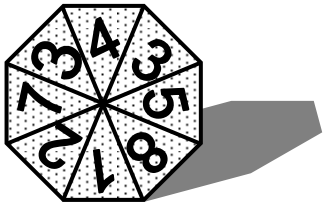
i. you will get a tail when you toss a coin
ii. you will get a six when throwing a dice
iii. a raw egg will break when you drop it
iv. you will live forever
v. you will leave school one day

Q2. A die is rolled. Find the probability that it lands with

a. 5
b. an even number
c. a prime number
d. a multiple of 3
e. a number greater than 4 uppermost.?



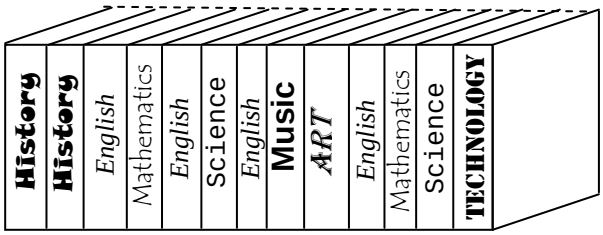
Q3. This spinner is used in a game.



What is the probability of getting

a. 1 **b**. an odd number **c**. a number greater than 3 ?

Q4. Mario keeps his schoolbooks on a shelf.



If he closes his eyes and chooses a book , what is the probability that it is

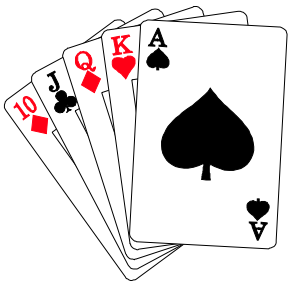
a. History **b**. Maths **c**. French **d**. English ?

Q5. If you pick a letter at random from the word **MATHEMATICS**, what is the probability that it will be

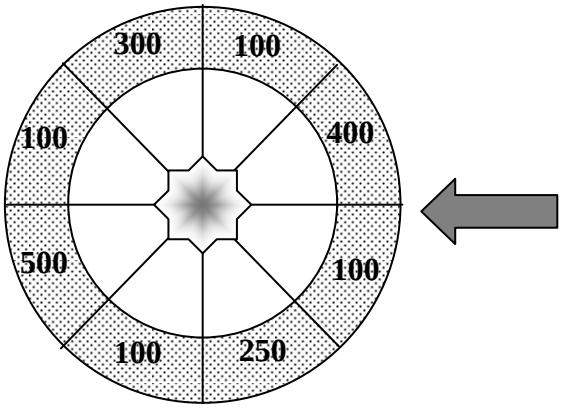
a. a vowel **b**. a consonant **c**. M ?

Q6. If you choose a card at random from an ordinary pack of playing cards, what is the probability of choosing

a. a face card
b. an ace
c. a heart ?



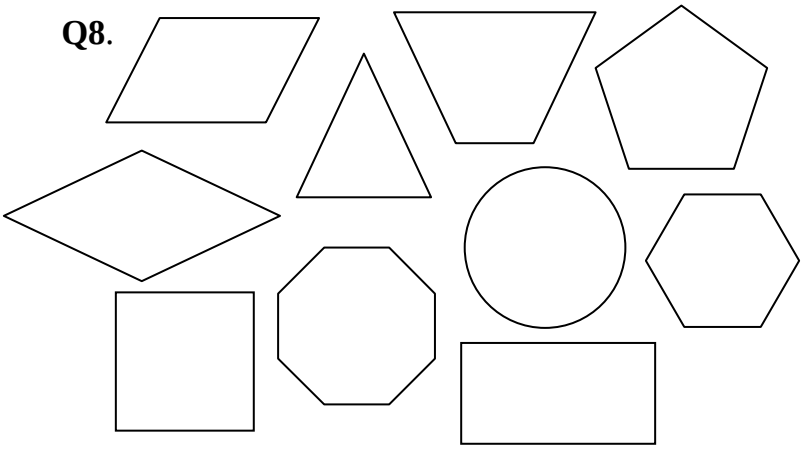
Q7. This "Wheel of Fortune" is used at a fundraising event.



What is the probability of winning

a. £100
b. £400
c. more than £250

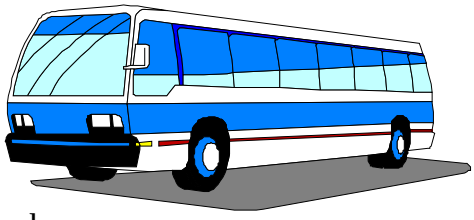
Q8.



If one of these geometric shapes is picked at random, what is the probability that it has

a. 4 sides
b. no axis of symmetry
c. less than 3 sides
d. more than 5 sides

Q9. A school party consisting of 4 teachers and 35 pupils go on a bus trip. The bus company supplies a driver.

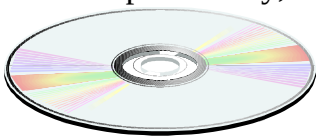


What is the probability that

a. if someone is sick, it is a pupil
b. if someone gets lost at a service station, it is a teacher
c. if someone starts singing, it is an adult ?

Q10. A box contain 20 CDs. 5 are music, 12 are computer games, 2 have program files and 1 has photographs.

What is the probability, if you pick a CD at random, it will have



a. photographs
b. music
c. computer games ?

Q11. In class 2G there are 15 pupils with blue eyes, 12 with brown eyes, 3 with green eyes and 2 with grey eyes.

What is the probability that the first pupil to enter the classroom on a Monday morning has

a. brown eyes
b. blue eyes
c. grey eyes
d. green eyes ?

ANSWERS

Trigonometry ~ Sine, cosine & tangent

Q1. graph of $y = \sin x^o$ **Q2**. graph of $y = \cos x^o$ **Q3**. graph of $y = \tan x^o$

Q4. **a**. 0.5 **b**. 0.5 **c**. –0.5 **d**. –0.5 **e**. 0.866 **f**. –0.866
g. –0.866 **h**. 0.866 **i**. 0.577 **j**. –0.577 **k**. 0.577 **l**. –0.577

Q5.

	$0 < x < 90$	$90 < x < 180$	$180 < x < 270$	$270 < x < 360$
$\sin x^o$	+	+	–	–
$\cos x^o$	+	–	–	+
$\tan x^o$	+	–	+	–

Q6. **a**. + **b**. – **c**. – **d**. + **e**. + **f**. +
g. + **h**. + **i**. – **j**. – **k**. – **l**. –

Trigonometry ~ Area of a triangle

Q1. **a**. 13 cm^2 **b**. 16.5 cm^2 **c**. 43.3 cm^2 **d**. 84.9 cm^2
e. 54.8 cm^2 **f**. 19.3 cm^2 **g**. 16.8 cm^2 **h**. 14.8 cm^2
i. 211.3 cm^2 **j**. 47.6 cm^2
Q2. 3.9 m^2
Q3. **a**. 0.93 m^2 **b**. 13 m^2

Trigonometry ~ Sine Rule

Q1. **a**. 10.3 cm **b**. 18.1 cm **c**. 7.5 cm **d**. 5.3 cm
e. 19.2 cm **f**. 5.1 cm **g**. 12.6 cm **h**. 8.0 cm
i. 4.7 cm **j**. 2.5 cm **k**. 33.4 cm
Q2. **a**. 27.2^o **b**. 18.8^o **c**. 49.0^o **d**. 28.2^o
e. 24.8^o **f**. 42.7^o **g**. 52.1^o **h**. 57.7^o
Q3. golfer 1 ~ 61.7 m,golfer 2 ~ 31.5 m **Q4**. **a**. 16^o **b**. 63.7 km
Q5. 126 km **Q6**. 20^o, 40.6 m

Trigonometry ~ Cosine Rule

Q1. **a**. 2.5 cm **b**. 5.9 cm **c**. 6.1 cm **d**. 4.6 cm
e. 19.9 cm **f**. 3.8 cm **g**. 9.1 cm **h**. 8.1 cm
i. 2.9 cm **j**. 7.5 cm **k**. 29.9 cm
Q2. **a**. 22.3^o **b**. 15.3^o **c**. 66.4^o **d**. 39.6^o
e. 22.2^o **b**. 42.0^o **c**. 98.4^o **d**. 67.3^o
Q3. 185 m **Q4**. 20.4 cm **Q5**. 214 m **Q6**. 64 km

Linear Relationships

Q1. F = 9P **Q2**. C = M + 30 **Q3**. C = 15H + 50 **Q4**. T = 28M + 25

Simultaneous Equations 1 ~ Graphs

Q1. (5, 4) **Q2**. (5, 3) **Q3**. **a**. (4, 3) **b**. (11, 3)
c. (9, 6) **d**. (12, 5) **e**. (8, 4) **f**. (20, 10)
g. (15, 3) **h**. (8, 3) **i**. (7, 3) **j**. (13, 4)

Q4.	**a**.	(6, 5)	**b**.	(6, 2)	**c**.	(2, 4)	**d**.	(2, 2)
	e.	(10, 3)	**f**.	(4, –3)	**g**.	(2, 5)	**h**.	(2, 0)
	i.	(1, –1)	**j**.	(4, 6)	**k**.	(2, 0)	**l**.	(–6, 6)
	m.	(5, –2)	**n**.	(–1, –3)	**o**.	(1, –1)		

Simultaneous Equations 2

Q1.	**a**.	(5, 5)	**b**.	(1, 1)	**c**.	(2, 4)	**d**.	(3, 6)
	e.	(3, 10)	**f**.	(5, 21)	**g**.	(4, 4)	**h**.	
Q2.	**a**.	(2.5, 1.5)	**b**.	(7, 2)	**c**.	(5, 2)	**d**.	(2, –1)
	e.	(6, –3)	**f**.	(4, –5)	**g**.	(–3, –2)	**h**.	(–11, –3)
	i.	(–8, –10)						
Q3.	**a**.	(7, 1)	**b**.	(10, 1)	**c**.	(4, 2)	**d**.	(2, 3)
	e.	(3, –1)	**f**.	(4, 4)	**g**.	(2, 5)	**h**.	(5, 1)
	i.	(2, 1)	**j**.	(4,2)	**k**.	(–1, –2)	**l**.	(1, –1)
Q4.	**a**.	(1, 2)	**b**.	(3, –1)	**c**.	(2, 2)	**d**.	(5, 1)
	e.	(5, 7)	**f**.	(5, –2)	**g**.	(3, –3)	**h**.	(4, –3)
	i.	(2, 3 ½)	**j**.	(½, 2)	**k**.	(1, 2)	**l**.	(5, 0)

Simultaneous Equations 3

Q1. chocolate 40p, crisps 30p
Q2. sandwich £1.20, hotdog 90p
Q3. ruler 40p, pencil 17p
Q4. tape £9, CD £13
Q5. 76p
Q6. rear £9.50, forward £11.25
Q7. 95 ml and 145 ml
Q8. frame 8, ridge 3
Q9. Star £25, readers £15
Q10. large 2kg, small 1.8kg
Q11. Yes, undercharged £1.10 on Thursday.

Graphs, Charts & Tables ~ Revision

Q1.	**a**.	6	**b**.	ready salted	**c**.	82	**d**.	roast chicken
	e.	ready salted, salt & vinegar, prawn cocktail, cheese & onion, smoky bacon, roast chicken						
Q2.	**a**.	Tuesday	**b**.	Wednesday	**c**.	12		
Q3.	**a**.	7	**b**.	3	**c**.	6	**d**.	35
Q4.	**a**.	**i**. ½	**ii**.	¼	**iii**.	$^1/_8$	**iv**.	$^1/_8$
	b.	300	**c**.	150				
Q5.	**a**.	**i**. ¼	**ii**.	½	**iii**.	$^1/_{20}$	**iv**.	$^1/_5$
	b.	action	**c**.	10				
Q6.	**a**.	**i**. $^1/_{10}$	**ii**.	$^2/_5$	**iii**.	$^3/_{10}$	**iv**.	$^1/_5$
	b.	walk	**c**.	12				
Q7.	**a**.	December	**b**.	6.5, 11	**c**.	2.5		
Q8.	**a**.	2.9 kg	**b**.	4.6, 5.7, 6.8	**c**.	1.2 kg	**d**.	11 and 12
Q9.	**a**.	paper 1	**b**.	paper 1 – 70, 73		paper 2 – 55, 70		

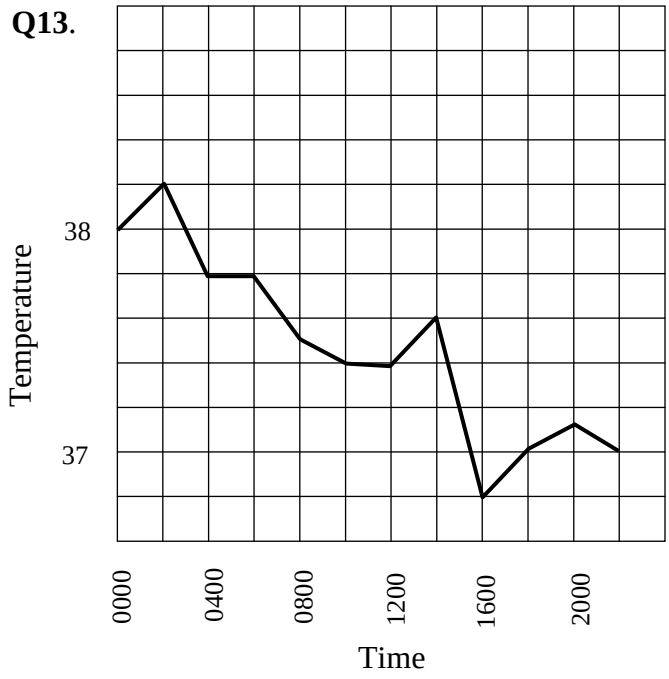
Q10. bar graph

Q11.

3	8	8	8	9	9	9											
4	1	2	2	2	2	2	3	3	4	4	5	6	7	7	8	8	9
5	0	1	1	1	2	3	7										

Q12. bar graph

Q13.



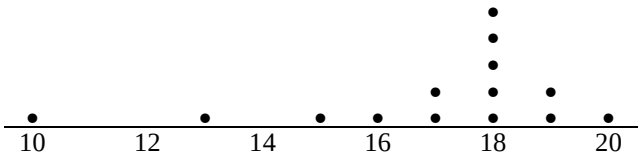
Q14.

0	8	9					
1	0	2	5				
2	0	1	2	5	6	7	8
3	1	3	6	7	7	8	9
4	1	2	4	5	8	8	9
5	0	0	2	5	7	9	
6	0	1	2	3	4		
7	7						
8	0	5					

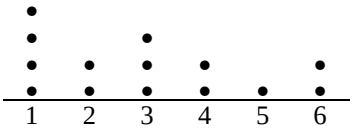
Graphs, Charts & Tables ~ Dot Plots

Q1.

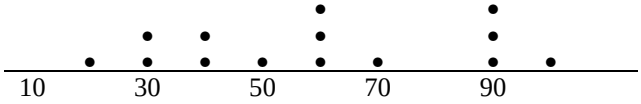
a.



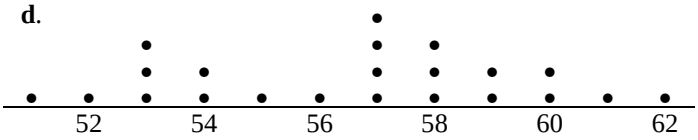
b.



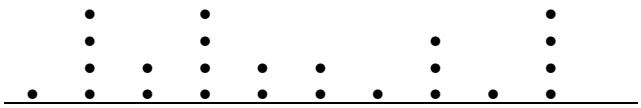
c.



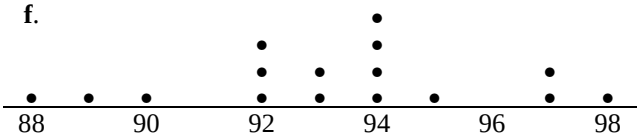
d.



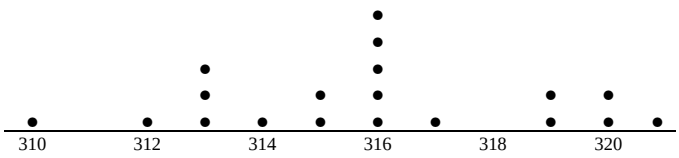
e.



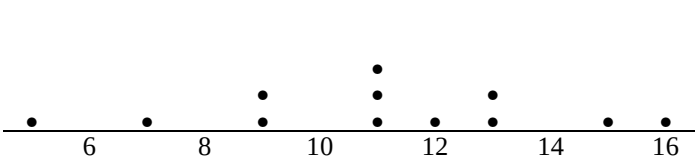
f.



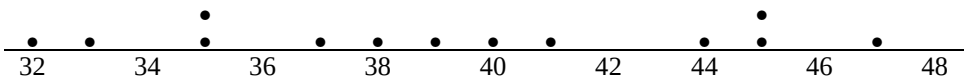
g.



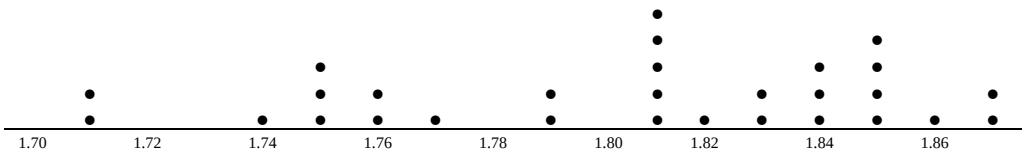
h.



i.

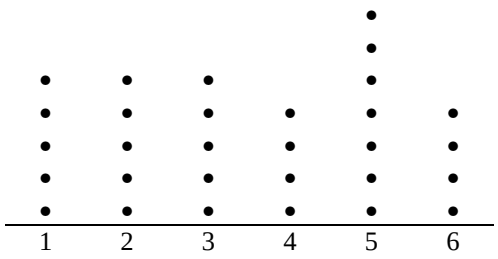


j.



Q2. **a**. 15 **b**. 27 **c**. 23 **d**. skewed

Q3.

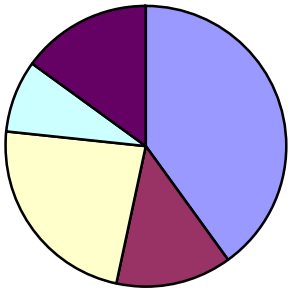


Graphs, Charts & Tables ~ Pie Charts

Q1.

Station	Number of people	Angle in piechart
Clyde 1	24	$\frac{24}{60}\times 360 = 144^o$
Clyde 2	8	$\frac{8}{60}\times 360 = 48^o$
Radio 1	14	$\frac{14}{60}\times 360 = 84^o$
Radio2	5	$\frac{5}{60}\times 360 = 30^o$
Scot fm	9	$\frac{9}{60}\times 360 = 54^o$

b.

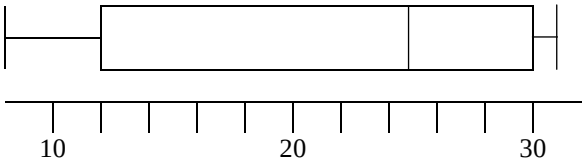


Q2. **a.** 92^o, 112^o, 44^o, 72^o, 28^o, 12^o **b.** 105^o, 126^o, 48^o, 81^o

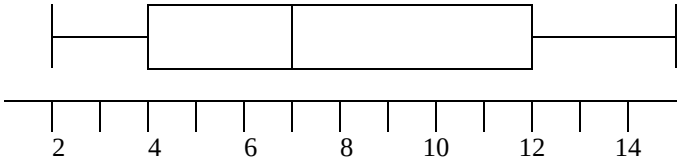
c. 120^o, 96^o, 48^o, 72^o, 24^o **b.** 120^o, 150^o, 25^o, 45^o, 20^o

Graphs, Charts & Tables ~ Box Plots

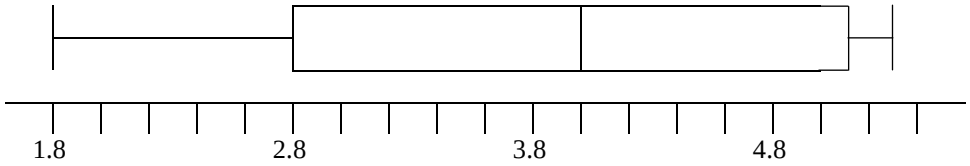
Q1. a.



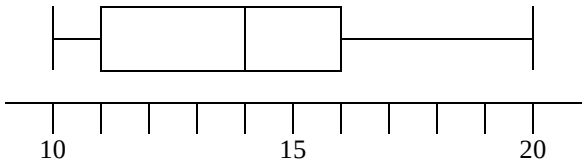
b.



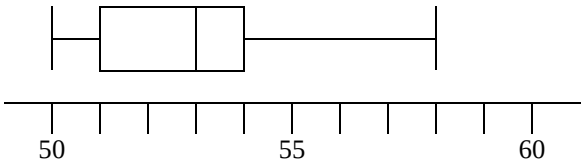
c.



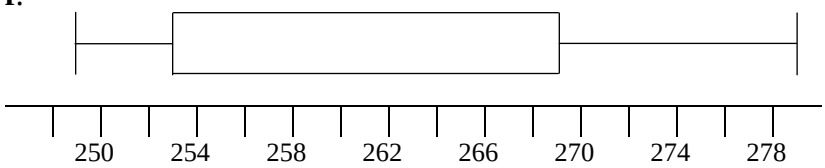
d.



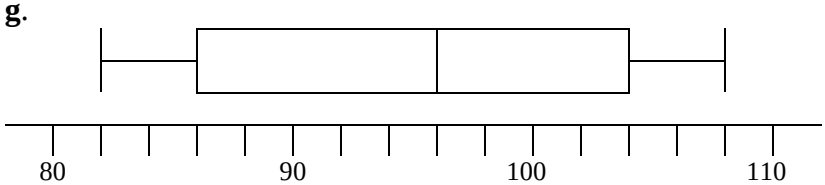
e.



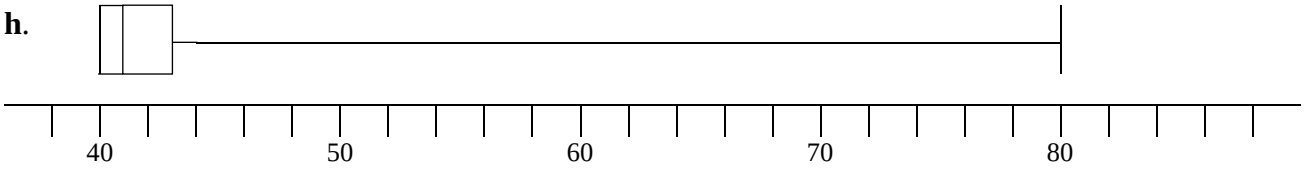
f.



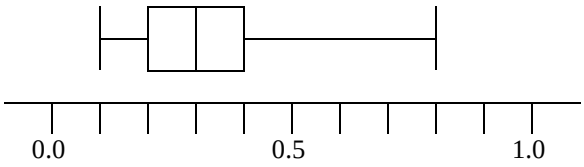
g.



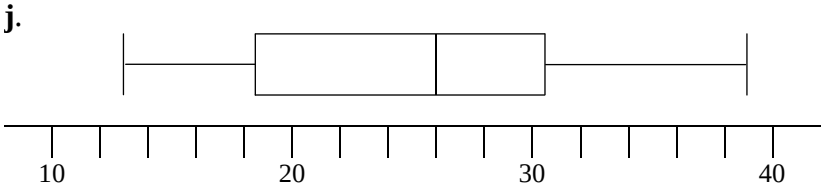
h.



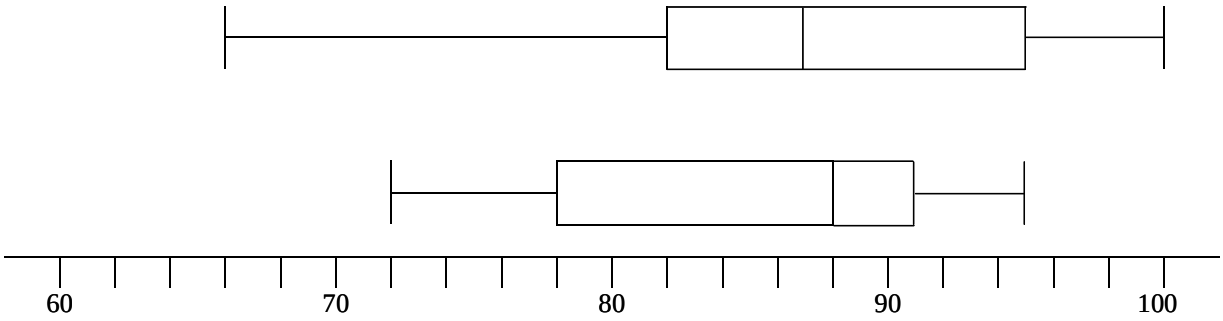
i.



j.

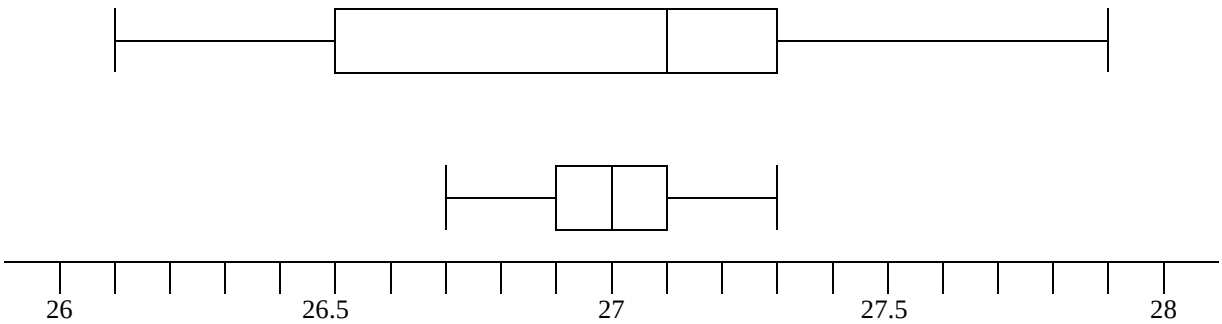


Q2.



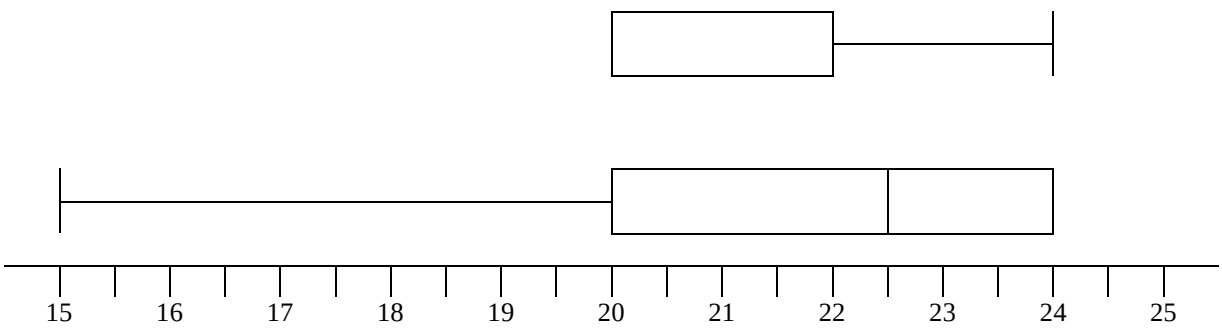
Class B has a higher median and a smaller range than class A.
Although class A has a higher maximum mark there is a greater spread of ability.

Q3.



Line B is the better line, there is less variation in the length of the shoe-laces.

Q4.



Statistics 1 ~Mean ,median,mode (revision)

Q1.

	mean	median	mode	range
a	11	12	13	6
b	52	52	51	5
c	4.3	5.3	5.3	5.6
d	13	12	14	9
e	15	15	15	18
f	12	12	14	7
g	0.39	0.40	0.43	0.14
h	5	5	5	6

Q2.

	mean	median	mode	range
a	7	7	7	8
b	6	5	3	14
c	2.3	2.2	2.2	1.8
d	84.6	85	81	9
e	2.5	2	2	3
f	1.2	0.95	0.8	1.6
g	323	322	308	35
h	13.2	12.15	9.7	11.2

Q3. 339.4, 322 **Q4**. 3.4, 3.4, 1.6 **Q5**. **a**. 2.75, 3, 4 **b**. 3
Q6. **a**. 8 **b**. 2.5 **c**. 3, 3 **Q7**. 6.5, 7, 8 **Q8**. 3.96, 4, 4

Statistics 2 ~ Mean & Standard Deviation

Q1.

	a.	**b**.	**c**.	**d**.	**e**.	**f**.	**g**.	**h**.
mean	20.3	302	14.99	87	62.8	4.45	0.23	39.6
SD	0.95	3.19	0.19	1.49	22.9	0.30	0.13	1.17

Q2. 3.44, 1.72
Q3. 4.95, 0.94
Q4. line A 27, 0.55; line B
Q5. 104.86, 15.4
Q6. 21.4, 3.11
Q7. John 73, 1.64 ; Joe 72, 5.20 Joe has lower mean score but John has better overall performance (lower standard deviation)
Q8. Dec 3313, 1025; Mar 2352, 564 December has higher mean takings but March has less variation in takings
Q9. 6C1 21.5,1.26 ; 6C2 21.5, 2.88 Same average but 6C1 has lower SD so less spread out.

Statistics 3 ~ Median & Quartiles

Q1.

	median	**Q1**	**Q3**	**SIR**
a.	7	4	12	4
b.	33	30	37	3.5
c.	22	19	25	3
d.	2	0	3	1.5
e.	4.0	2.8	5.1	1.15
f.	0.275	0.185	0.305	0.06
g.	139	136	142	3
h.	382	376	387	5.5
i.	67	59	83.5	12.25
j.	14	11	16	2.5

Q2.

	median	**Q1**	**Q3**	**SIR**
a.	56	50	61	5.5
b.	26	16	34	9
c.	165	152.5	169	8.25
d.	3	1	4	1.5
e.	128.5	115	157.5	21.25
f.	63	50	70.5	10.25
g.	180	166	187	10.5
h.	346	317	363	23
i.	0.9	0.6	1.1	0.25
j.	11	10	13.5	1.75

Q3.

	f	cf
0	4	4
1	7	11
2	7	18
3	4	22
4	1	23
5	1	24
	24	

Q1 = 1, median = 2, Q3 =3

Q4.

	f	cf
0	1	1
1	0	1
2	1	2
3	3	5
4	3	8
5	2	10
6	3	13
7	5	18
8	7	25
9	4	29
10	3	32
	32	

Q1 = 9, median = 7, Q3 = 7.5

Statistics 4 ~ Scattergraphs & Correlation

Q1. **a**. no relation **b**. positive **c**. negative

Q2. **a**. positive correlation (more rain – more people buy umbrellas)

b. no relation

c. negative correlation (the faster you go, the less time it takes)

Q3. **a**. yes **b**. yes, but not strong **c**. yes **d**. no

Statistics 5 ~ Regression (best fit line)

Q1. student's best fit lines

Q2. Answers will vary depending on where line is drawn

a. $y = 1.67x + 3.3$ **b**. $y = 0.4x + 1.5$ **c**. $y = 1.2x - 6$

d. $y = -1.5x + 9$ **e**. $y = -1.5x + 12$ **f**. $y = -0.25x + 7$

Q3. H = 0.6D + 0.7, 1.6

Q4. $y = 3.8x + 6$

Q5. $l = 0.9F + 2.2$, 6.25

Q6. C = –2T + 67, 62°C

Q7. S = 7T, 70 mph

Q8. C = 1.1m + 177, £215.50

Q9. R = –0.35V + 0.61, 0.3

Statistics 6 ~ Probability

Q1. Diagram

Q2. **a**. $^1/_6$ **b**. ½ **c**. ½ **d**. $^1/_3$ **e**. 1/3

Q3. **a**. $^1/_8$ **b**. $^5/_8$ **c**. ½

Q4. **a**. $^2/_{13}$ **b**. $^2/_{13}$ **c**. 0 **d**. $^4/_{13}$

Q5. **a**. $^4/_{11}$ **b**. $^7/_{11}$ **c**. $^2/_{11}$

Q6. **a**. $^3/_{13}$ **b**. $^1/_{13}$ **c**. ¼

Q7. **a**. ½ **b**. $^1/_8$ **c**. $^3/_8$

Q8. **a**. ½ **b**. $^1/_{10}$ **c**. 0 **d**. ¼

Q9. **a**. $^7/_8$ **b**. $^1/_{10}$ **c**. $^1/_8$

Q10. **a**. $^1/_{20}$ **b**. ¼ **c**. $^3/_5$

Q11. **a**. $^3/_8$ **b**. $^{15}/_{32}$ **c**. $^1/_{16}$ **d**. $^3/_{32}$