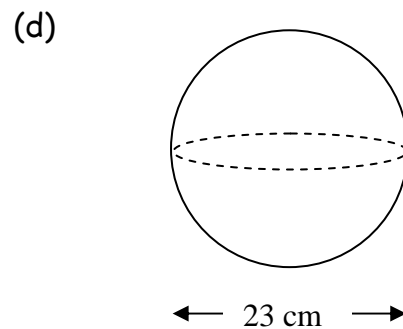
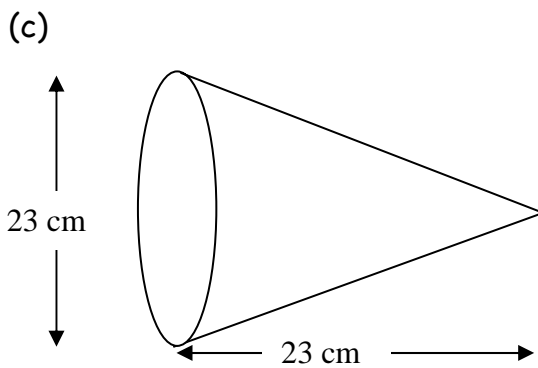
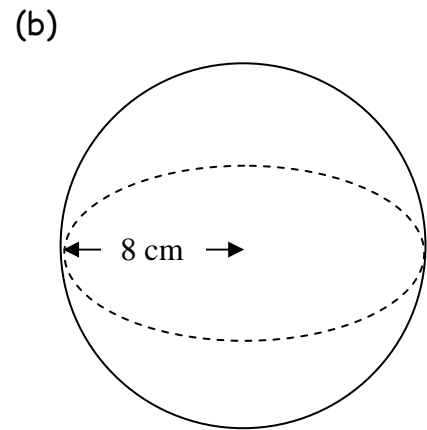
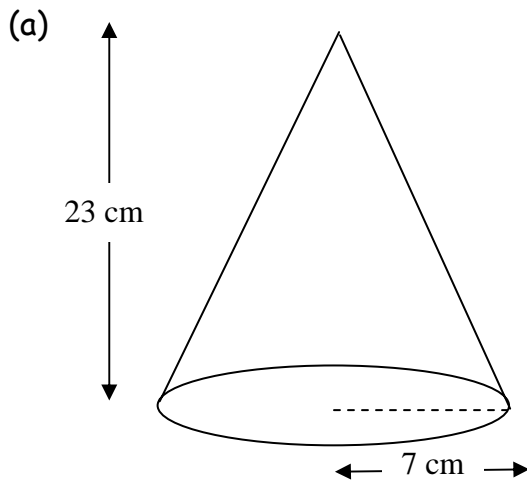


Int 2 Homework Exercise 2 - Sphere

- 1 For each of the solid shapes below, calculate the volume, correct to 1 decimal place.



- 2 Write the following numbers in standard form.

a) 6 000

b) 560

c) 123 000

d) 0.007

e) 0.483

f) 9.65

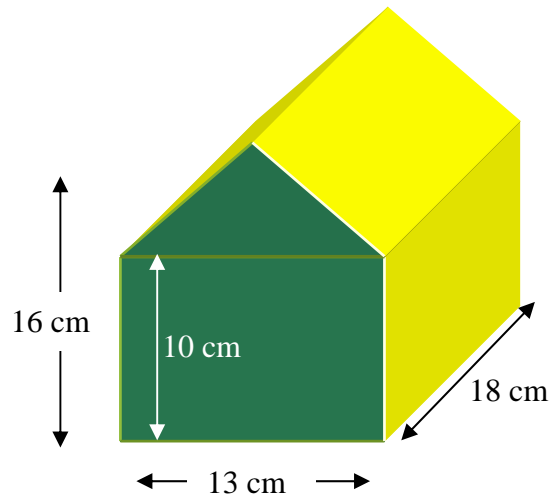
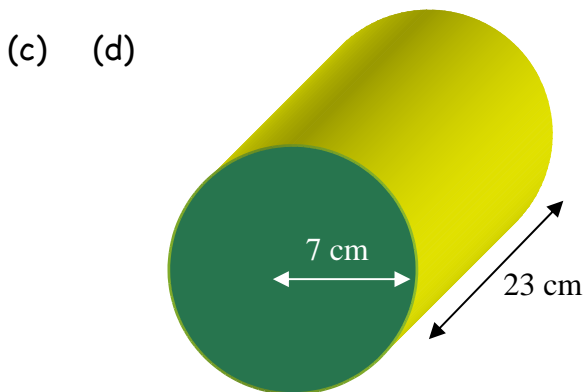
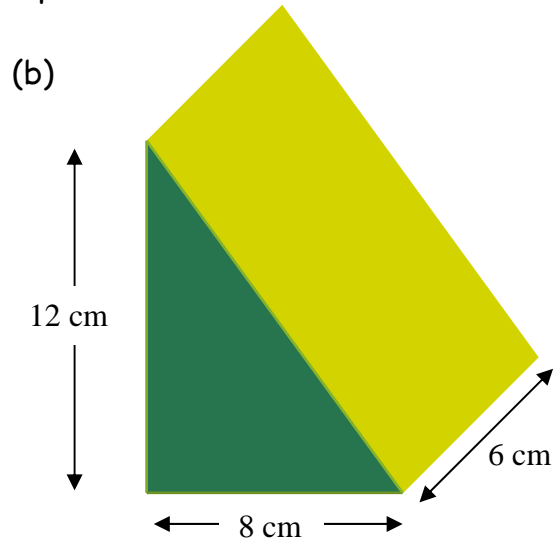
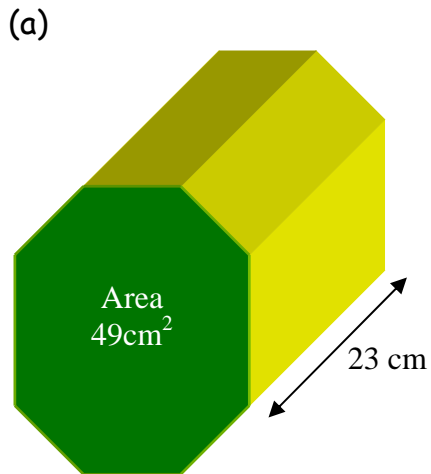
- 3 Solve the following equations:

a) $3x + 7 = 22$

b) $2(3x - 5) = 32$

Int 2 Homework Exercise 3 - Prisms

- 1 For each of the solid shapes below, calculate the volume, correct to 1 decimal place.



- 2 Solve the following equations:

a) $4x - 9 = 31$

b) $3(2x + 7) = 51$

- 3 Write the following numbers in standard form.

a) 0.582

b) 0.046

c) 0.000913

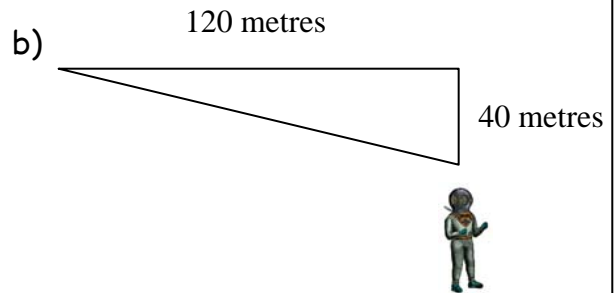
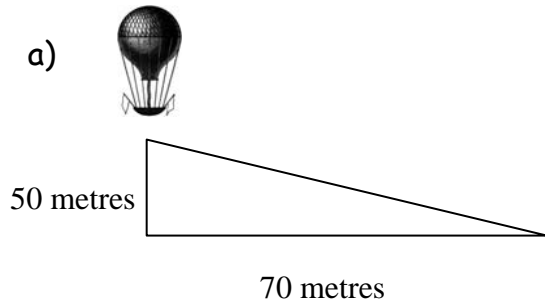
d) 0.05

e) 3.48

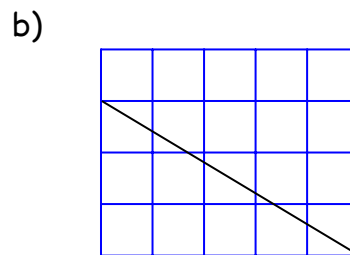
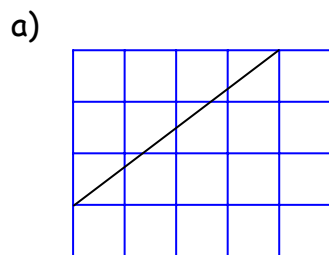
f) 17

Int 2 Homework Exercise 4 - Gradients

1 Calculate the gradient of the following slopes:



2 Calculate the gradient of the following lines:



3 Calculate the gradients of the lines joining the following points:

a) $K(3,4)$ and $L(7,6)$

b) $P(-3,-2)$ and $Q(4,3)$

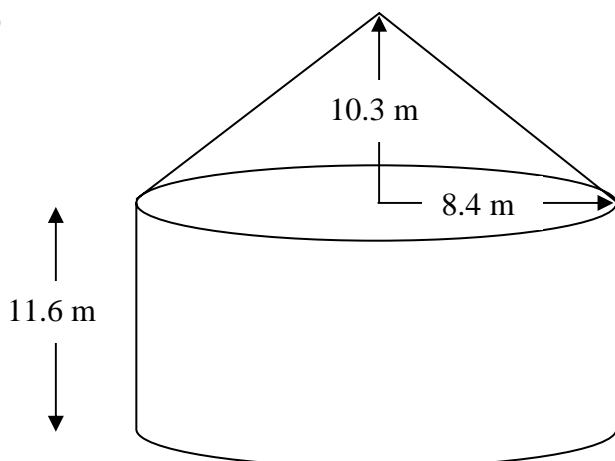
4 Write down the gradient and y -intercept of each of these lines.

a) $y = 2x + 5$

b) $4y = 3x - 12$

c) $2x - 5y - 35 = 0$

5



An oast house is a combination two basic shapes.

It has a cylindrical base, height 11.6 metres and a radius of 8.4 metres. with a cone roof with height 10.3 metres.

Calculate the volume of the oast house.

Int 2 Homework Exercise 5 - Brackets

1 Remove the brackets

a) $4(a-12)$

b) $6(5-a)$

2 Remove the brackets

a) $2w(2w-3)$

b) $2x(x-3)$

3 Remove the brackets

a) $-2(6x-5)$

b) $-2y(3y-4)$

4 Remove the brackets

a) $(x+2)(x+3)$

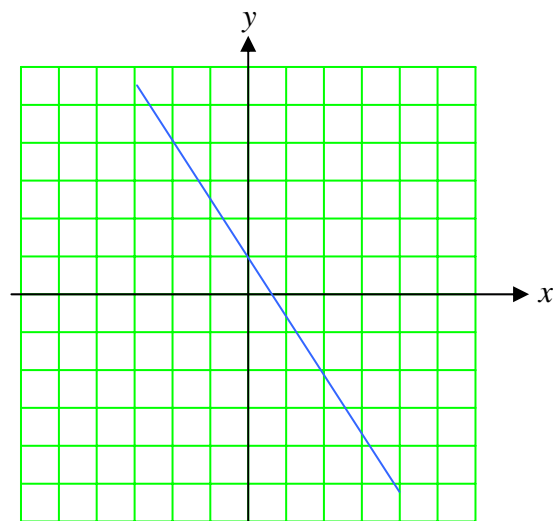
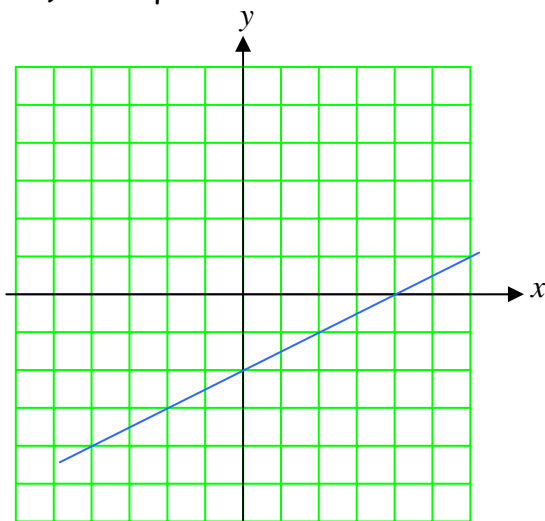
b) $(t-3)(t+4)$

5 For each line calculate:

a) the gradient

b) the y intercept

c) the equation of the line



Int 2 Homework Exercise 6 - Factorise

1 Factorise

a) $4x+6$

b) x^2-3x

2 Factorise

a) $5x^2-15x$

b) a^2b+ab^2

3 Factorise

a) a^2-25

b) $4a^2-81$

4 Factorise

a) x^2+5x+6

b) $x^2-10x+16$

c) $x^2+4x-21$

d) $x^2-2x-35$

5



The population of Dunfermline is increasing at a rate of 2% per annum.

The population of Dunfermline is 55 420 currently.

What will be the population in three years time?

6 A dress costs £125.60

In a sale the price is reduced by 35%.

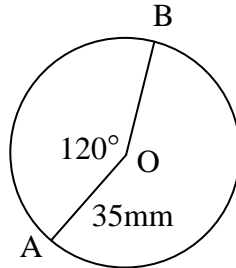
Calculate the sale price of the dress.



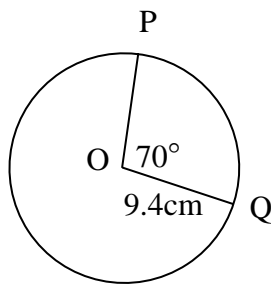
SALE
DISCOUNT
35%

Int 2 Homework Exercise 7 - Circle 1

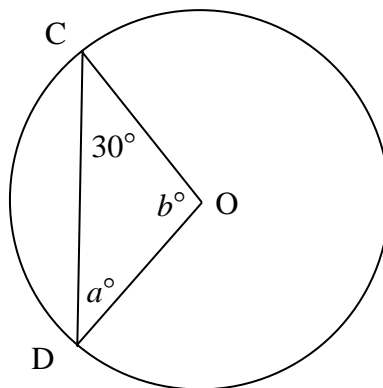
- 1 Calculate the length of the minor arc AB in the circle with radius 35 millimetres.



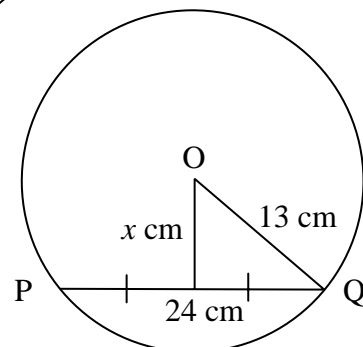
- 2 Calculate the area of the sector OPQ in the circle with radius 9.4 centimetres.



- 3 Copy the circle and calculate the size of a and b

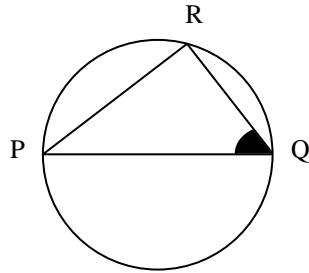


- 4 Calculate the length of the side marked x .

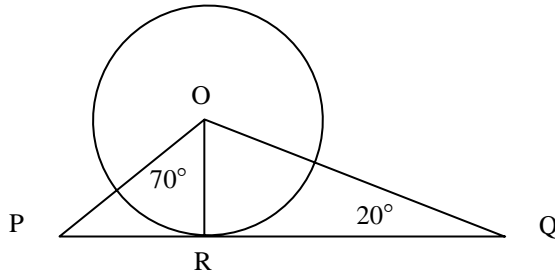


Int 2 Homework Exercise 8 - Circle 2

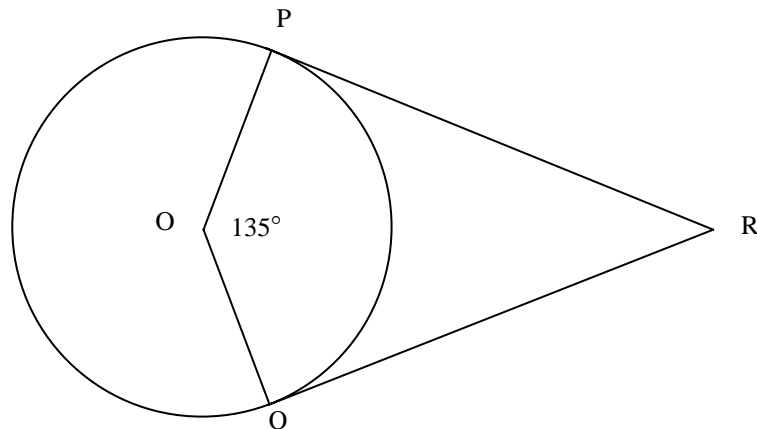
- 1 The diagram shows a triangle PQR inscribed in a circle with diameter PQ. Given that angle RPQ is 36° ; find the size of the shaded angle.



- 2 PQ is a tangent to the circle; centre O, touching the circle at R. Copy the diagram and fill in the size of all the angles.

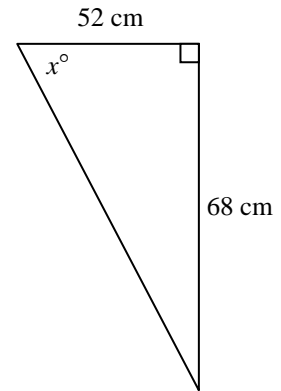
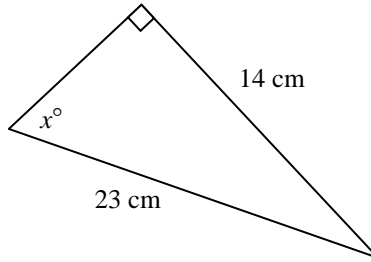
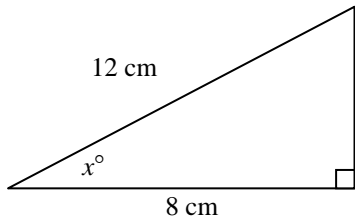


- 3 The diagram below shows a kite POQR in a circle centre O. PR is a tangent to the circle at P and QR is a tangent to the circle at Q. Given that angle POQ is 135°
- State the size of angle OQR.
 - Calculate the size of angle PRQ.

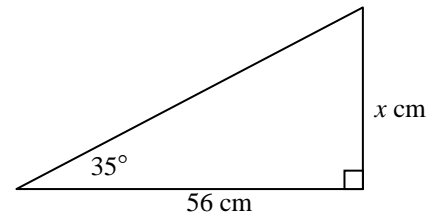
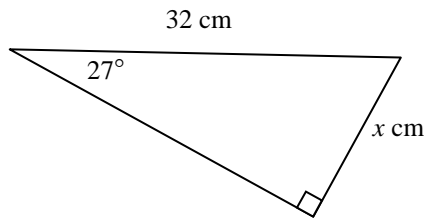
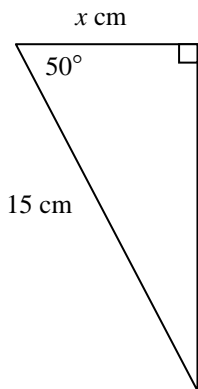


Int 2 Homework Exercise 9 - Trig Revision

1 Calculate the size of the angle marked x° .



2 Calculate the length of the side marked x centimetres.

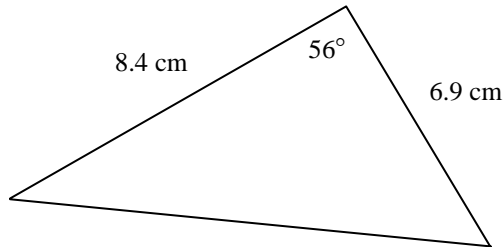


3 Without a calculator, copy and fill in the exact values.

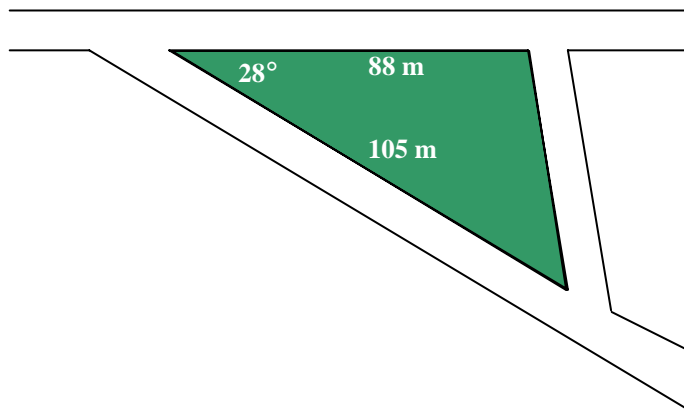
x°	0°	30°	45°	60°	90°
$\sin x^\circ$					
$\cos x^\circ$					
$\tan x^\circ$					

Int 2 Homework Exercise 10 - Trig Area of a Triangle

- 1 Calculate the area of the triangle to 2 significant figures.



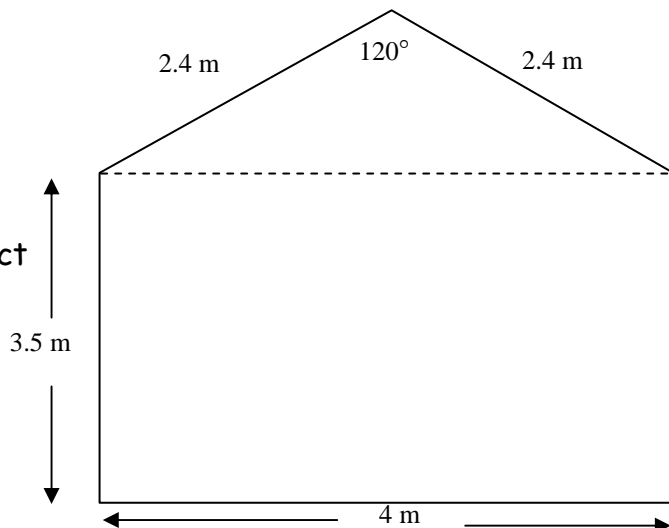
- 2 The intersection of three roads leaves a triangular piece of ground in the middle. What is the area of the piece of ground to the nearest m^2 .



- 3 The gable end of a hut is treated with weather sealant. In order to calculate how much to buy, the painter needs to know the area to be treated.

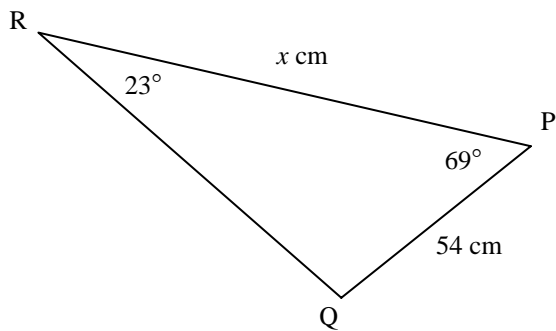
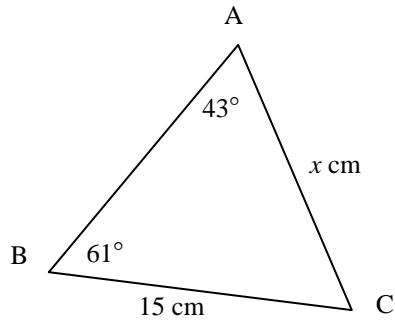
Calculate the area of:

- a) the rectangular part
- b) the triangular part correct to 2 decimal places.
- c) the complete gable end

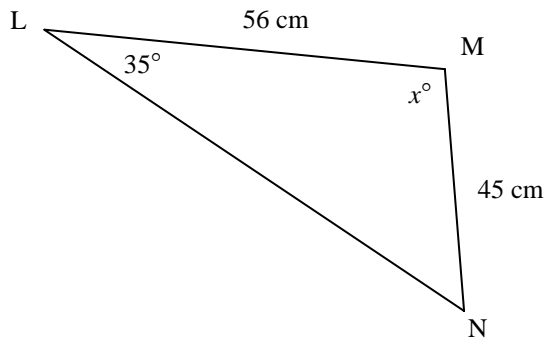
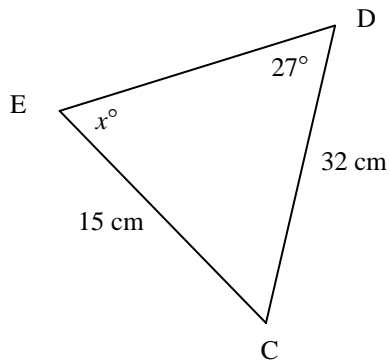


Int 2 Homework Exercise 11 - Sine rule

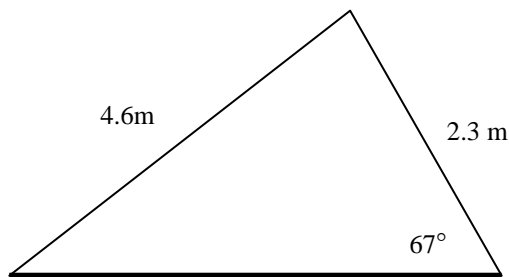
- 1 Calculate the length of the side marked x centimetres, correct to 3 significant figures.



- 2 Calculate the size of the angle marked x° , correct to 1 decimal place.

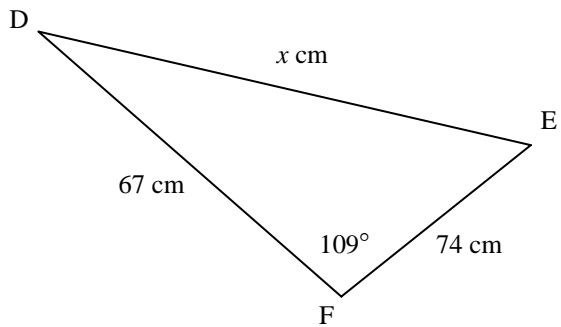
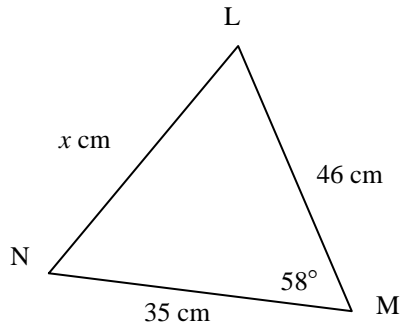


- 3 A playground slide has a 2.3 metres ladder. The slide measures 4.6 metres. The ladder makes an angle of 67° with the ground. Calculate the angle the slide makes with the ground correct to 1 decimal place.

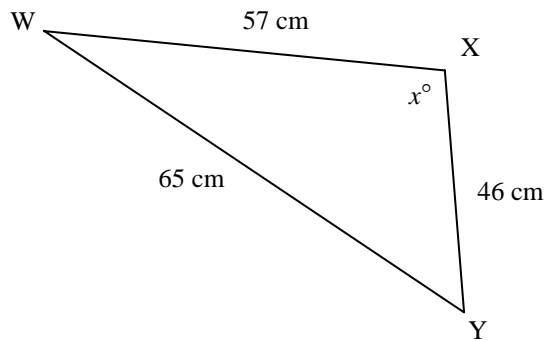
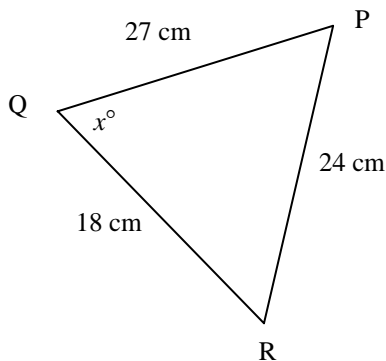


Int 2 Homework Exercise 12 - Cosine Rule

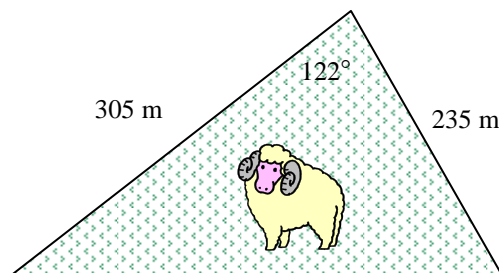
- 1 Calculate the length of the side marked x centimetres, correct to **2 significant figures**.



- 2 Calculate the size of the angle marked x° , correct to **2 decimal places**.

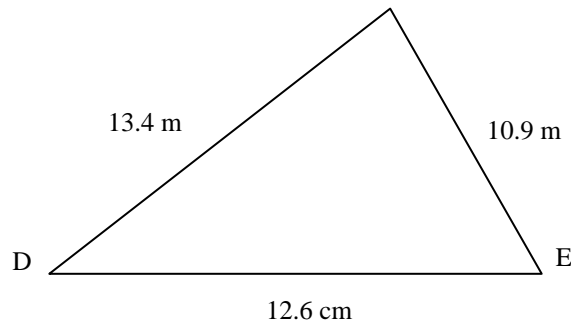


- 3 A farmer has a triangular piece of land. He wishes to completely fence in the land so he can graze his sheep. If two sides of the field measure 305 metres and 235 metres and the angle between them measures 122° , calculate how much fencing the farmer will need.



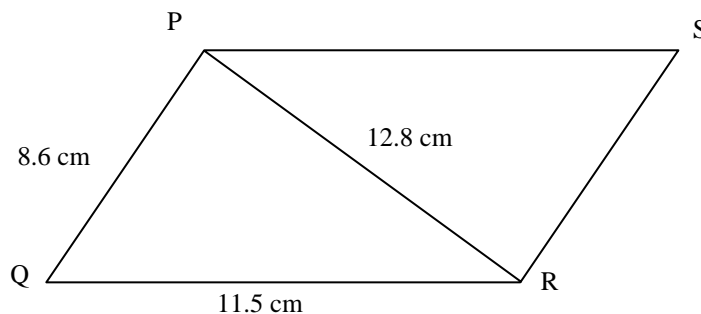
Int 2 Homework Exercise 13 - Problem Solving Trig.

- 1 A field with sides measuring 12.6 metres, 13.4 metres and 10.9 metres is represented by the triangle DEF shown below.



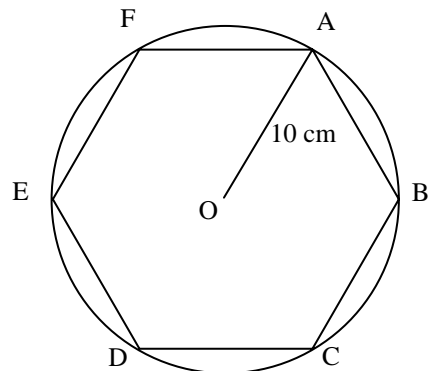
- a) Calculate the size of angle DEF. **Do not use a scale drawing.**
b) Calculate the area of the field.

- 2 The sketch shows a parallelogram PQRS



- a) Calculate the size of angle PQR. **Do not use a scale drawing.**
b) Calculate the area of the parallelogram.

- 3 A regular hexagon ABCDEF is drawn in a circle, centre O, with radius 10 centimetres



Calculate the area of the regular hexagon

Int 2 Homework Exercise 14 - Simultaneous Equations

1 Solve the following pairs of simultaneous equations algebraically.

a)
$$\begin{aligned}x + y &= 11 \\x - y &= 9\end{aligned}$$

b)
$$\begin{aligned}5x + 3y &= 18 \\2x - 3y &= 3\end{aligned}$$

c)
$$\begin{aligned}7x + y &= 15 \\2x - 3y &= 1\end{aligned}$$

d)
$$\begin{aligned}2x + 3y &= 16 \\4x - 9y &= 2\end{aligned}$$



Int 2 Homework Exercise 15 - Table & Charts 1

1 Calculate the mean, median, mode and range of the following data:

2,4,7,5,9,6,4,3,2,3,10.

2 Marks for a test were marked but still had to be sorted. Here are the marks:

12, 34, 43, 19, 25, 8, 29, 44, 27, 33, 22, 47, 35, 15, 37
19, 41, 27, 48, 19, 29, 38, 15, 7, 33, 21, 18, 41, 31, 25

(a) Copy and complete this table.

Mark	1-10	11-20	21-30	31-40	41-50
Number					

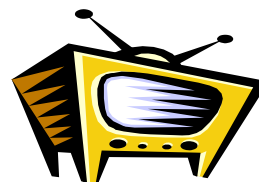
(b) Make a bar graph to illustrate the information in the table

3 The length of time between one programme finishing and the next one starting is the subject of a survey. Twenty of these inter-programme gaps are measured:

1.25, 2.35, 5.71, 4.74, 3.12, 5.10, 1.23, 3.61, 3.77, 2.79,
3.25, 1.45, 3.29, 4.88, 2.62, 4.16, 5.02, 1.94, 2.00, 4.77.

The times are in minutes.

(a) Round these times to one decimal place.

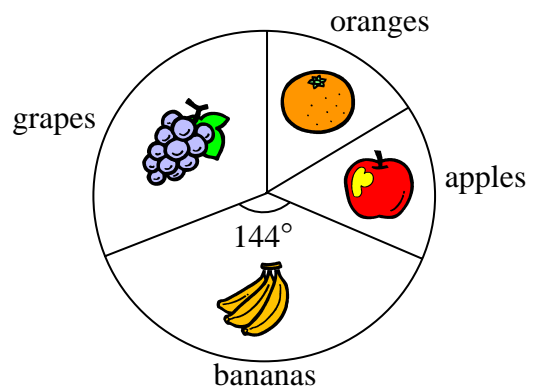


(b) Make a stem-and-leaf diagram of the rounded data.

4 500 pupils were asked what was their favorite fruit.

The pie chart illustrates their replies.

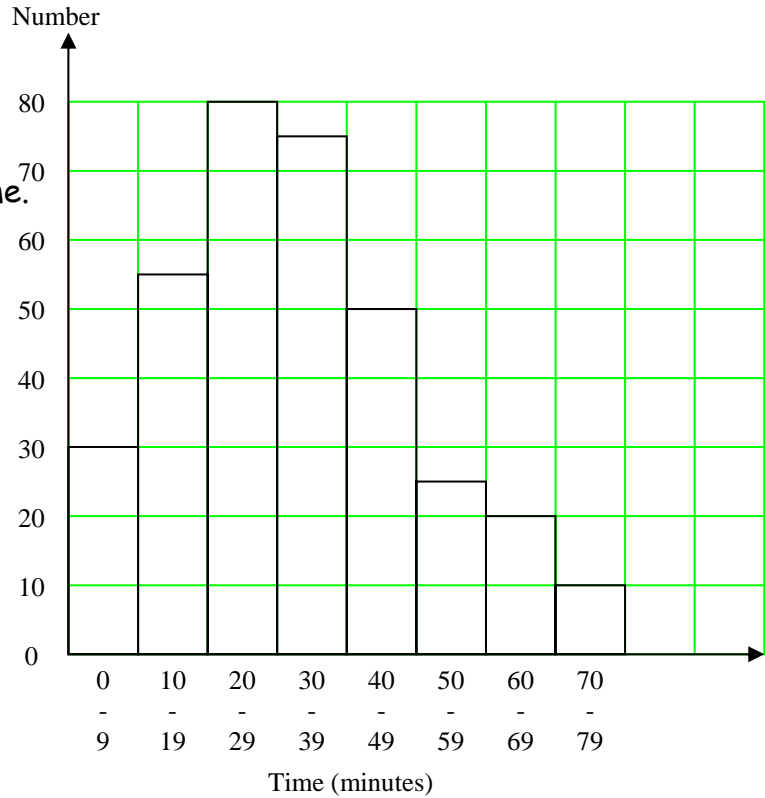
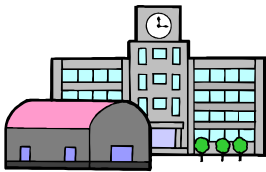
How many pupils chose bananas?



Int 2 Homework Exercise 16 - Table & Charts 2

1 The bar chart shows the amount of time pupils spend travelling to school.

- (a) How many pupils took part in the survey?
- (b) Write down the modal time.
- (c) In which class interval is the median?
- (d) Calculate the mean time to the nearest minute.

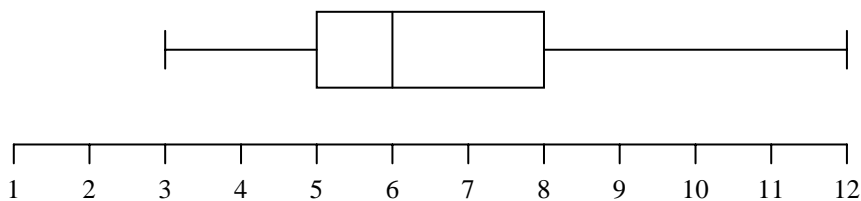


2 The number of pupils attending the after school keep fit class over 20 days was noted.

10 10 11 12 13 15 15 16 17 18
19 19 20 20 20 21 22 22 23 23

- a) Make a five-figure summary.
b) Draw a box plot.

3. The box plot shows the number of letters in the first name of a sample of pupils.



- a) How long is (i) the shortest (ii) the longest first name
b) What is (i) the lower quartile (ii) the upper quartiles (iii) the median length?

Int 2 Homework Exercise 17 - Unit 2 Revision

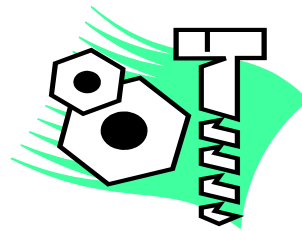
1 Four bolts and three nuts together weigh 36 grams. Two bolts and one nut weigh 16 grams.

a) Form two equations to show this information

b) Solve the equations to find the weight of

(i) a bolt

(ii) a nut



2 The points scored by ten rugby teams one weekend have been put in order

3 5 8 14 21 22 26 34 50 50

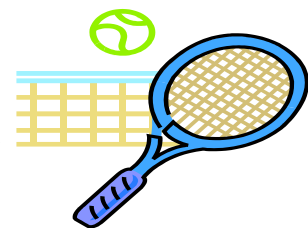
a) Make a five - figure summary

b) Draw a box plot to display this information.



3 A company makes a machine that serves tennis balls for players to hit for practice. To test the machine it is set for 80 kilometres per hour and the actual speed of the balls recorded.

82 86 75 80 79 72 75 88 86 74



a) Calculate the mean speed of the balls

b) Calculate the standard deviation correct to 1 decimal place.

c) If the mean speed is within 2 kilometres per hour of the setting and the standard deviation is less than 5 kilometres per hour the machine passes; if not it needs adjusting. What action should be taken?

Int 2 Homework Exercise 18 - Wages

1 Copy and complete the weekly payslip shown below.

Basic Wages	Overtime	Bonus	Expenses	Gross Wage
377.94	22.6	0.00	35.86	
Income Tax	Nat Ins	Superannuation	Other	Total Deductions
52.62	151.43	13.47	0.00	
			Net Wage	

2 Jennifer works a basic 35 hour week as a physiotherapist



She is paid at a basic rate of £5.40 per hour.

On Saturday she works for 4 hours of overtime at time and a half.

On Sunday she works 3 hours at double time.

a) Calculate her basic weekly wage

b) If she pays 15% of her basic pay into a pension scheme, how much will she contribute each week?

Int 2 Homework Exercise 19 - Loans

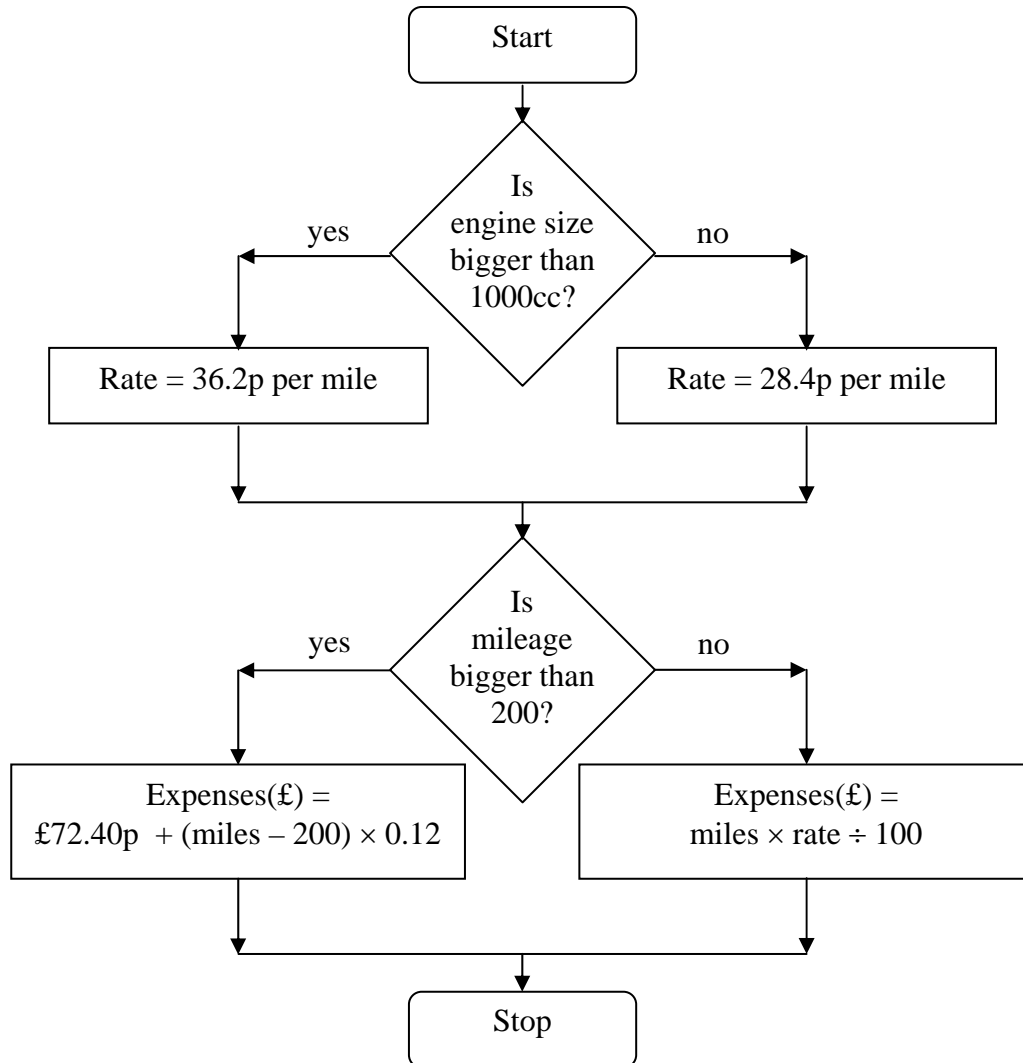
1 A table for loan repayments is shown below

Loan Amount	£2500 at 16.7%APR	£5000 at 15.9%APR	£8000 at 14.8%APR			
Repayment terms	Monthly Repayment	Total Repayment	Monthly Repayment	Total Repayment	Monthly Repayment	Total Repayment
12 months	181.08	A	451.01	5412.12	718	E
36 months	69.92	2517.12	173.03	C	F	9831.96
60 months	B	2892.60	118.63	D	185.81	G

- How many years are in 60 months?
- How much is the APR on a loan of £8000?
- How much is the monthly repayments on a loan of £2500 over 36 months?
- How much is the monthly repayments on a loan of £8000 over 12 months?
- Calculate the total repayments of a loan of £2500 over 12 months (A).
- Calculate the monthly repayments of a loan of £2500 over 60 months (B).
- Calculate the total repayments of a loan of £5000 over 36 months (C).
- Calculate the total repayments of a loan of £50000 over 60 months (D).
- Calculate the total repayments of a loan of £8000 over 12 months (E).
- Calculate the monthly repayments of a loan of £8000 over 36 months (F).
- Calculate the total repayments of a loan of £8000 over 60 months (G).

Int 2 Homework Exercise 20 - Flowcharts

- 1 The flowchart allows you to work out travelling expenses when you know the car's engine size and the number of miles travelled



What expenses are due for:

- a car with a 1500cc engine travelling 150 miles
- 200 miles in a car with a 1000cc engine
- a 995cc engine car travelling 552 miles?