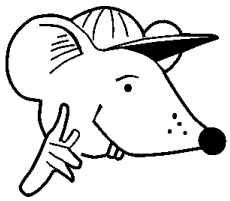
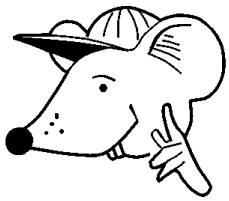
Back to Menu



MATHEMATICS



N.S. Yr. 5 P.111

Make turns; estimate, draw and measure angles.

Equipment

Paper, pencil, ruler, set squares, protractor.

MathSphere

© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Concepts

Children should be able to use, read and write the following vocabulary:

Turn, rotate, whole turn, half turn, quarter turn, angle, right angle, acute, obtuse, straight line, degree, ruler, set square, angle measurer, protractor.

The most important thing that children should understand about angles is that they are a **measure of turn**.

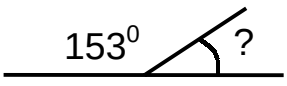
Patterns can be made by rotating shapes such as set-squares. As this is done emphasis should be given to the fact that this involves rotation. If a whole number of angles complete one rotation (six 60^0 angles of a set-square, for instance, it should be understood that this makes one whole rotation or 360^0).

Children should know the meaning of acute and obtuse as well as right angle, and should be able to differentiate between the three types by observation. They should be becoming better at estimating angles, although this is difficult even for adults. The numeracy hour document specifies estimating an angle to within 5^0, but frankly, I would like to see them do this! Allow good margins of error when estimating.

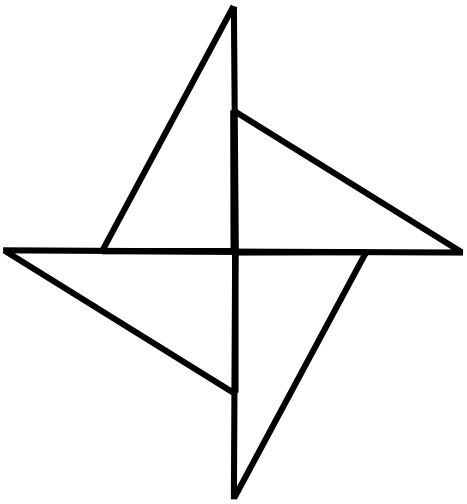
They should be able to spot acute and obtuse angles in the classroom/home. If you live in a very right angled environment, it is possible to create some acute and obtuse angles in advance (doors and windows opening, the lid of a CD case opening, a book on display with some pages visible, an open folder, clocks, displays of some letters of the alphabet such as V or X, for example).

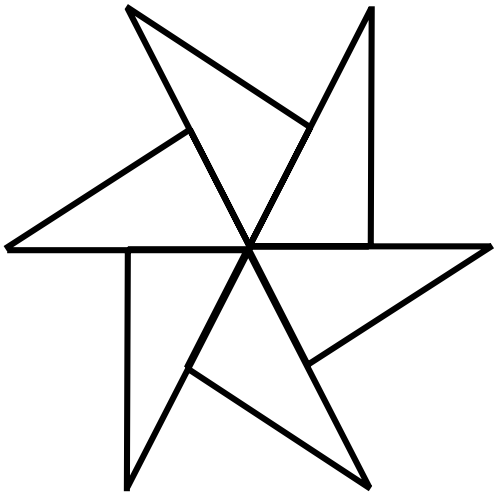
Children should be able to measure angles using a protractor to within 5^0. A protractor is a difficult instrument to use because (i) it measures rotation, not the length of the arms of the angle (ii) it has two scales going in opposite directions (iii) it has extra plastic below the zero line to protect the useful part, but this often obscures the zero line (iv) children do not always appreciate that it has a zero line that must be placed on one of the sides of the angle and (v) one needs to be quite dextrous to align the zero line with one side, whilst placing the 'centre' of the protractor on the vertex of the angle. Children should therefore be given much practice in its use and much patience needs to be shown by the teacher/parent.

Lastly, children should be able to calculate the value of a second angle on a straight line, if the first is given.



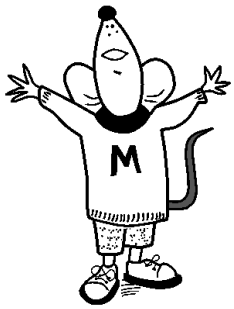
© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk





Look at these patterns made with set-squares.

Pretty, don't you think?



Pretty clever, I'd say!

Can you make some clever patterns like these with your set-squares?

You might need a large piece of paper!

Write here what an acute angle is.

_____

Write here what an obtuse angle is.

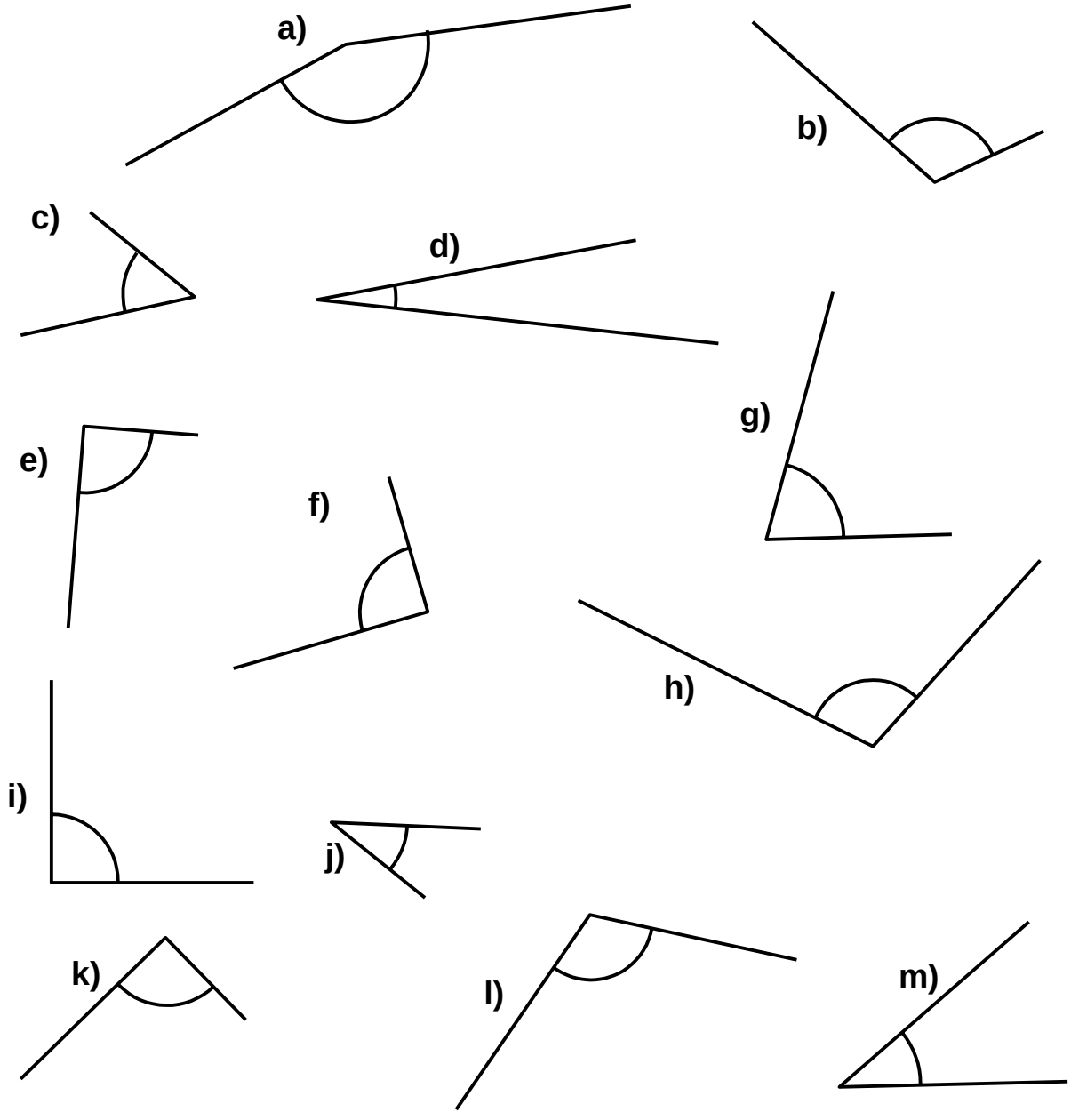
_____

© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Here are some angles.

Put the letter '**A**' next to those that are acute and the letter '**O**' next to those that are obtuse. If you see any right angles, put a letter '**R**' on them.

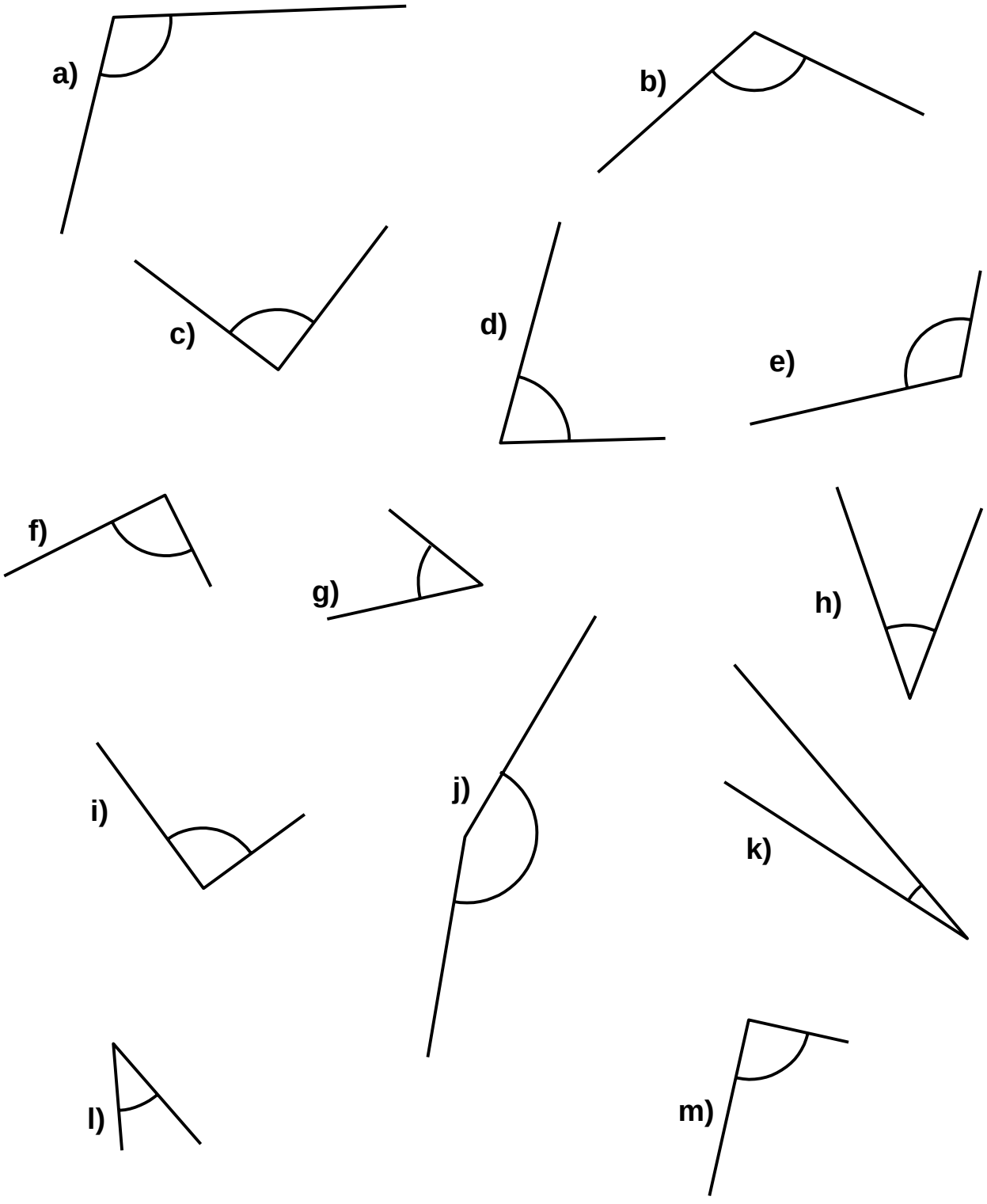
Acute angle	**Obtuse Angle**
An angle greater than 0^0, and less than 90^0	An angle greater than 90^0, and less than 180^0



© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Here are some angles.

Put the letter '**A**' next to those that are acute and the letter '**O**' next to those that are obtuse. If you see any right angles, put a letter '**R**' on them.



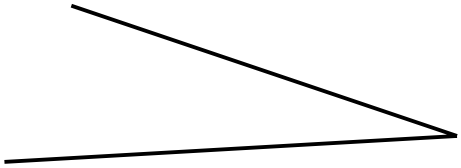
© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Estimate the size of each of these angles to the **nearest 5^0** (5^0, 10^0, 15^0, 20^0 and so on).

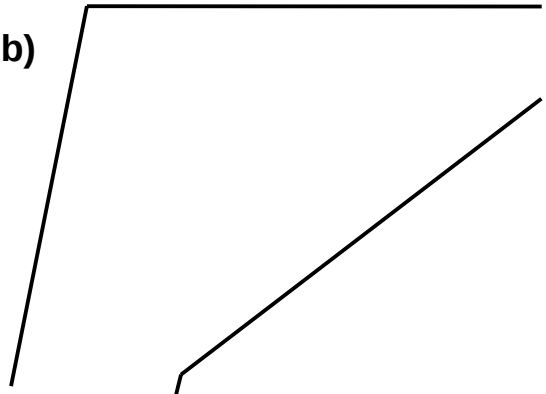
Then measure the angles to the **nearest 5^0**.

Put all your results in the table.

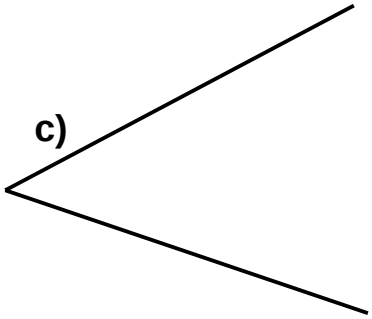
a)



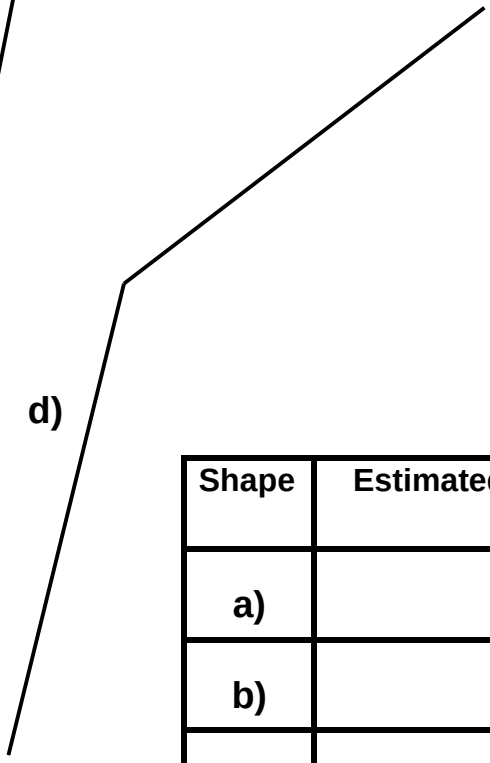
b)



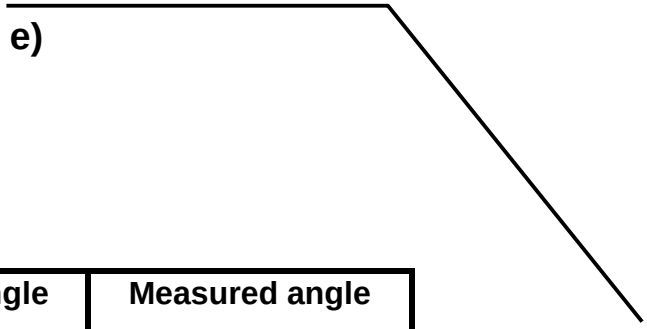
c)



d)



e)



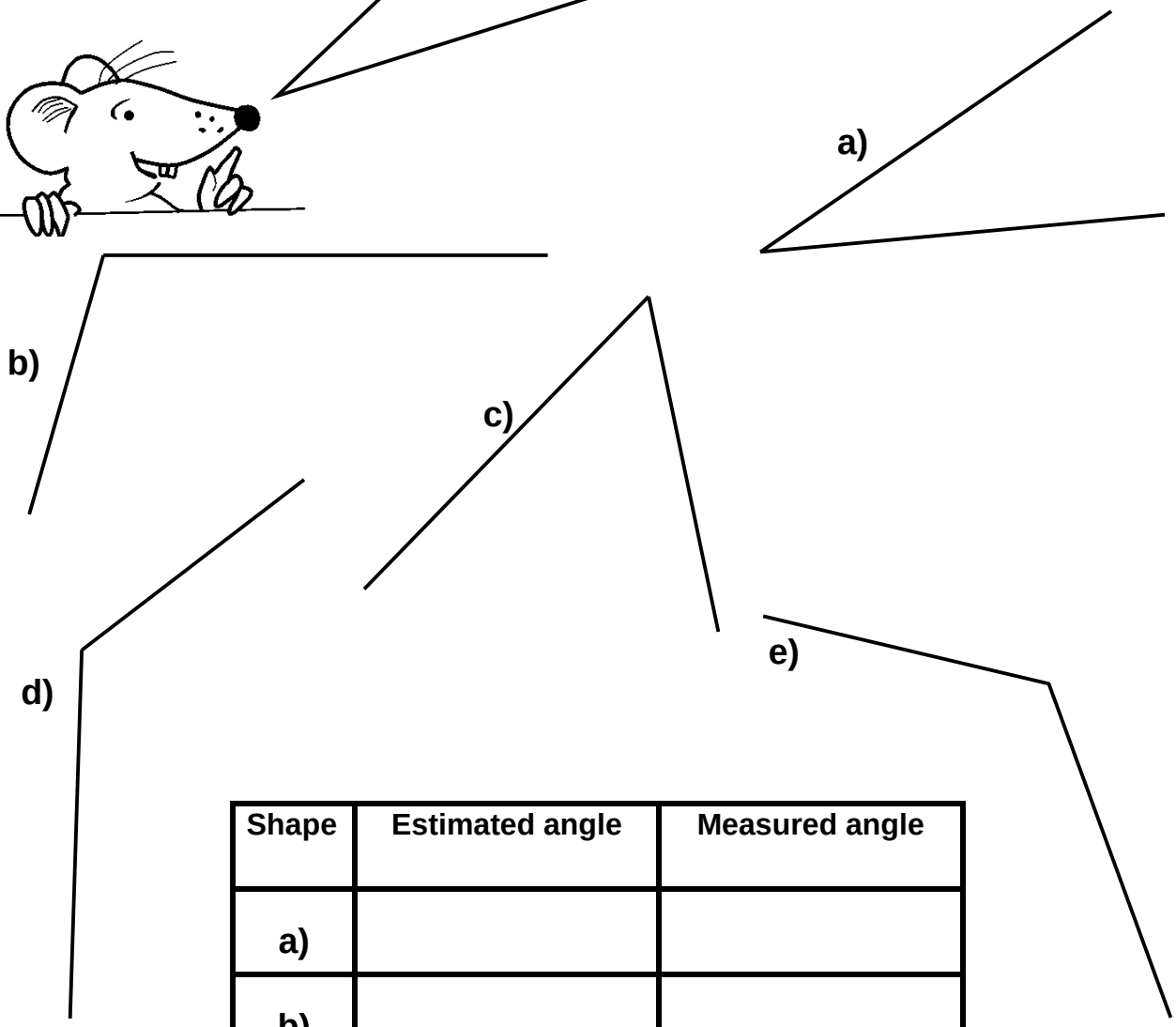
Shape	Estimated angle	Measured angle
a)		
b)		
c)		
d)		
e)		

© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Estimate the size of each of these angles to the **nearest 5^0** (5^0, 10^0, 15^0, 20^0 and so on).

Then measure the angles to the **nearest 5^0**.

Put all your results in the table.



Shape	Estimated angle	Measured angle
a)		
b)		
c)		
d)		
e)		

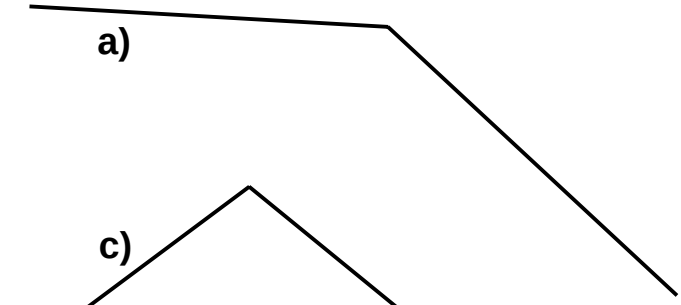
© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Estimate the size of each of these angles to the **nearest 5^0** (5^0, 10^0, 15^0, 20^0 and so on).

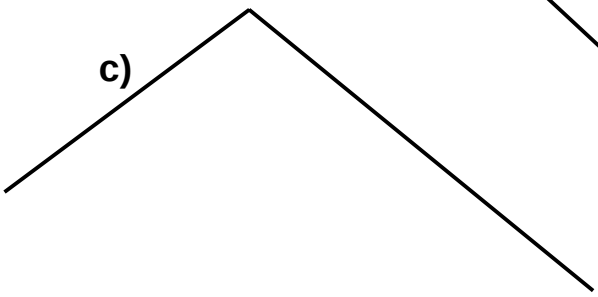
Then measure the angles to the **nearest 5^0**.

Put all your results in the table.

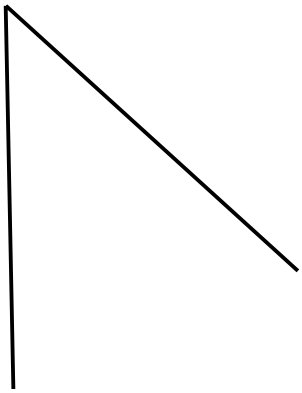
a)



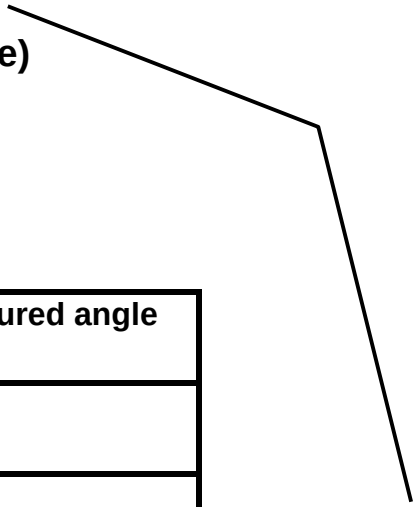
c)



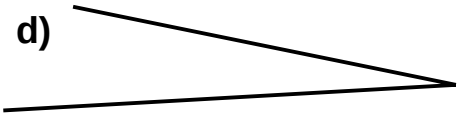
b)



e)



d)



Shape	Estimated angle	Measured angle
a)		
b)		
c)		
d)		
e)		

© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Draw angles of the following sizes: Use a larger sheet of paper or your exercise book.

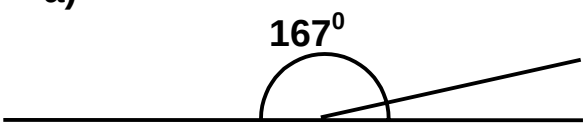
35^0, 70^0, 20^0, 25^0, 55^0, 130^0, 145^0, 115^0

Write the size of each angle on its shape.

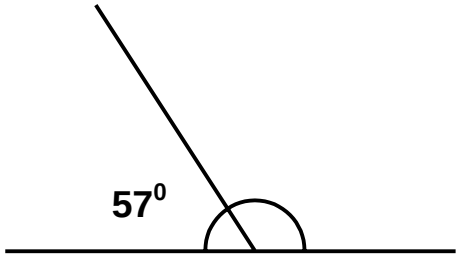
Calculate the missing angles. These are not drawn to scale, so do **not** measure the angles.

Write the missing angles on the diagrams.

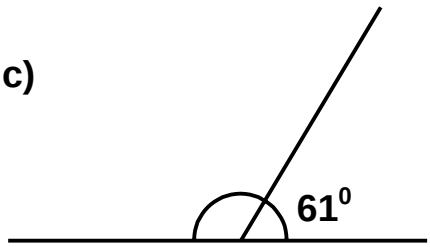
a)



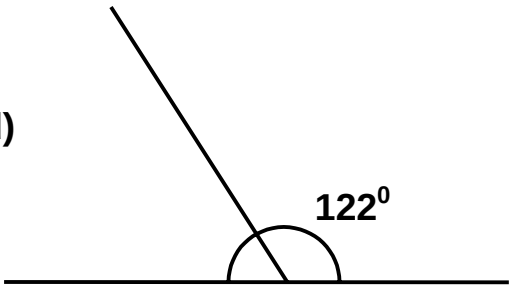
b)



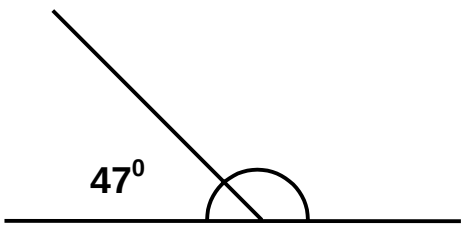
c)



d)



e)



f)

© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Draw angles of the following sizes: Use a larger sheet of paper or your exercise book.

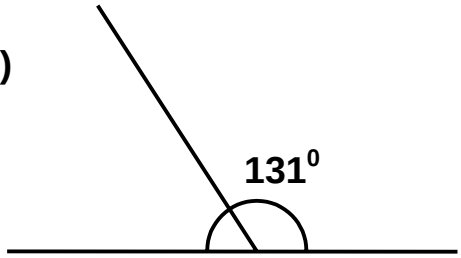
60^0, 85^0, 125^0, 95^0, 70^0, 170^0, 35^0, 55^0

Write the size of each angle on its shape.

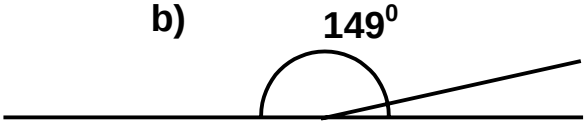
Calculate the missing angles. These are not drawn to scale, so do **not** measure the angles.

Write the missing angles on the diagrams.

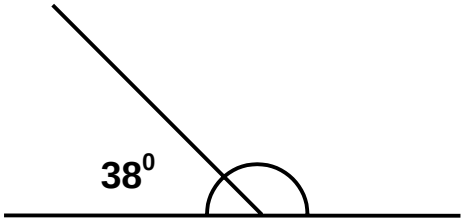
a)



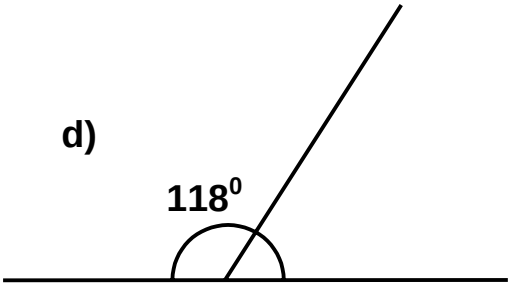
b)



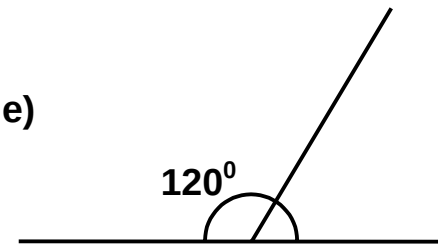
c)



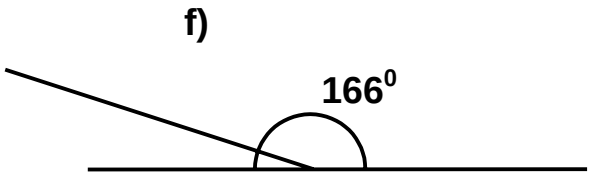
d)



e)



f)



© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

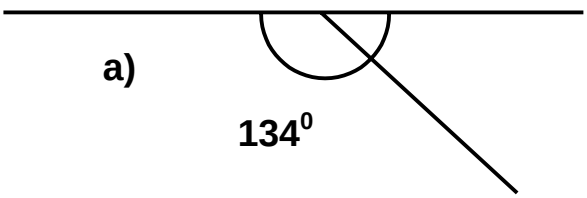
Draw angles of the following sizes: Use a larger sheet of paper or your exercise book.

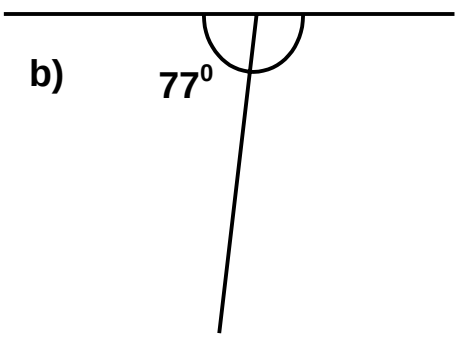
60^0, 95^0, 80^0, 155^0, 25^0, 115^0, 45^0, 70^0

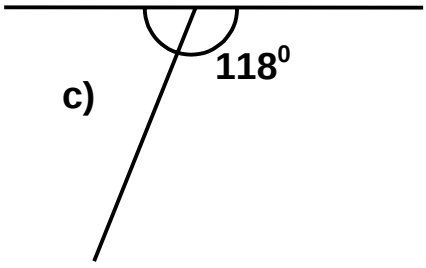
Write the size of each angle on its shape.

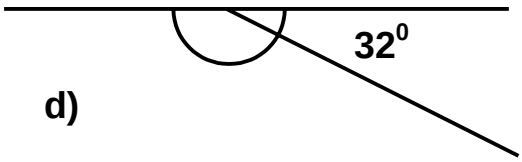
Calculate the missing angles. These are not drawn to scale, so do **not** measure the angles.

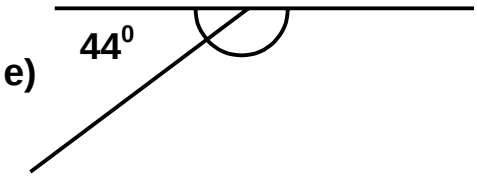
Write the missing angles on the diagrams.

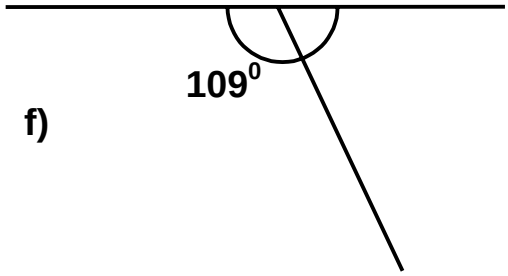












© MathSphere P.O. Box 1234 Worthing BN13 2UJ www.mathsphere.co.uk

Answers

Page 3
An acute angle is one that is greater than 0^0 and less than 90^0.
An obtuse angle is one that is greater than 90^0 and less than 180^0.

Page 4
a) Obtuse **b)** Obtuse **c)** Acute
d) Acute **e)** Right **f)** Right
g) Acute **h)** Obtuse **i)** Right
j) Acute **k)** Right **l)** Obtuse
m) Acute

Page 5
a) Obtuse **b)** Obtuse **c)** Right
d) Acute **e)** Obtuse **f)** Right
g) Acute **h)** Acute **i)** Right
j) Obtuse **k)** Acute **l)** Acute
m) Right

Page 6
a) 20^0 **b)** 100^0 **c)** 45^0 **d)** 140^0 **e)** 130^0

Page 7
a) 30^0 **b)** 105^0 **c)** 55^0 **d)** 130^0 **e)** 125^0

Page 8
a) 140^0 **b)** 45^0 **c)** 105^0 **d)** 15^0 **e)** 125^0

Page 9
a) 13^0 **b)** 123^0 **c)** 119^0 **d)** 58^0 **e)** 133^0
f) 162^0

Page 10
a) 49^0 **b)** 31^0 **c)** 142^0 **d)** 62^0 **e)** 60^0
f) 14^0

Page 11
a) 46^0 **b)** 103^0 **c)** 62^0 **d)** 148^0 **e)** 136^0
f) 71^0