

Name: _____ Maths Group: _____ Tutor Set: _____

Homework Booklet

KS3 Levels 3-8

Unit 12 – Lines, Angles and Shapes

Remember to use the back of a page if you need more working out space.

Complete this table indicating the homework you have been set and when it is due by.

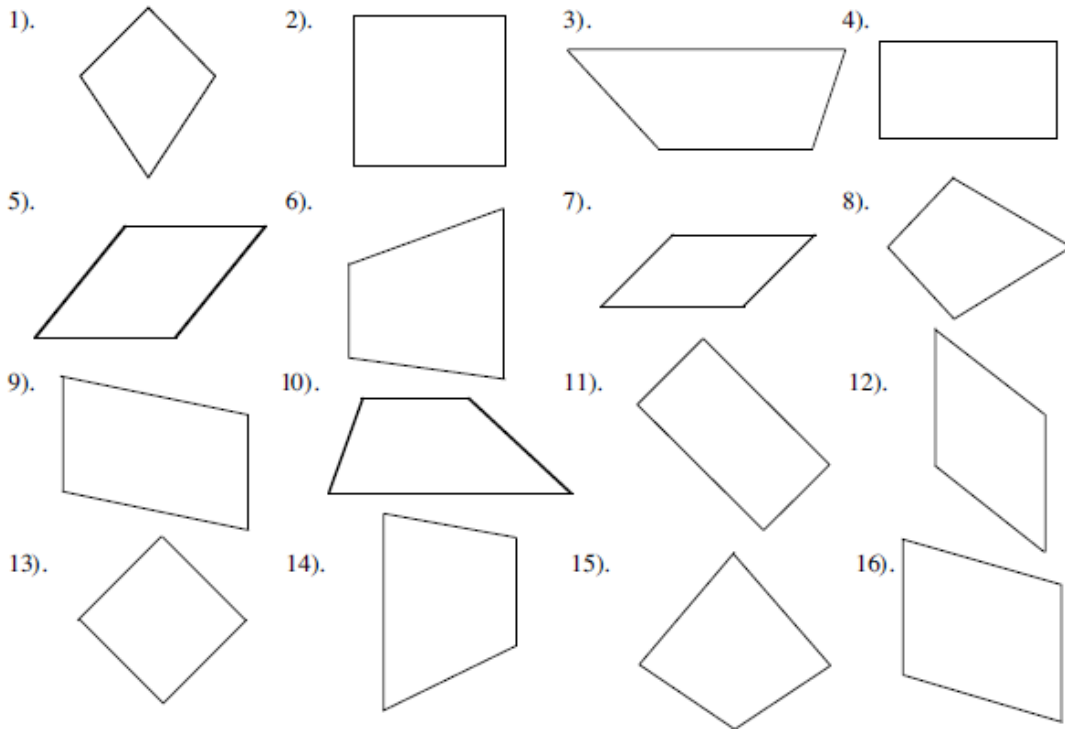
Date	Homework	Due By	Handed In

Please take care of the booklet as you will be required to make a donation to replace it if lost or damaged beyond use.

U12 – Lines, Angles and Shapes
Classifying Quadrilaterals
No Calculator Allowed

Section A

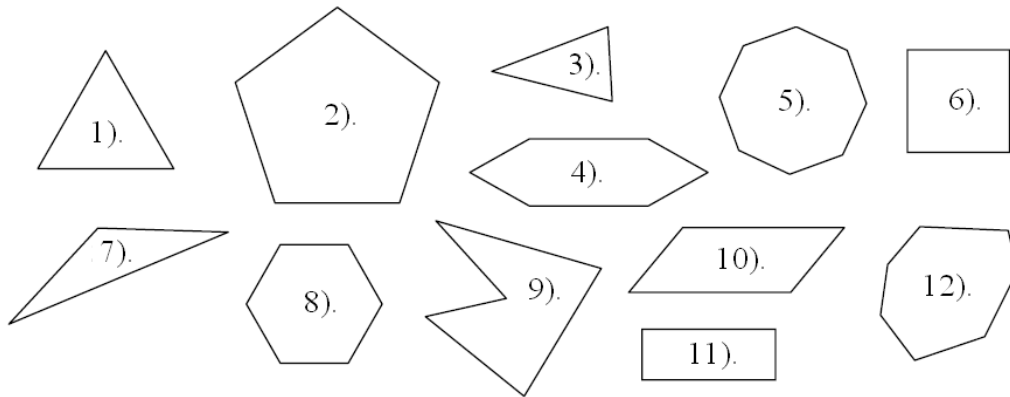
For each of these quadrilaterals, name them and say one special property.



Shape	name	Special property
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

U12 – Lines, Angles and Shapes
Properties of Shapes
No Calculator Allowed

Beside each shape write its name.



Fill in the blanks with the correct Triangle names:

- a) A triangle with 3 equal sides and 3 equal angles is a(n) _____ triangle.
- b) A triangle with no equal sides or angles is a(n) _____ triangle.
- c) A triangle with a 90° angle is called a(n) _____ triangle.
- d) A triangle with 2 equal angles and 2 equal sides is a(n) _____ triangle.

Name the following quadrilaterals.



What does the word 'regular' mean when used to describe a polygon?
 (e.g. Regular Pentagon, Regular Octagon, etc)

- a) A triangle has three equal sides. Write the sizes of the angles in this triangle. _____ .

..... $^\circ$, $^\circ$, $^\circ$

- b) A right-angled triangle has two equal sides. Write the sizes of the angles in this triangle.

..... $^\circ$, $^\circ$, $^\circ$

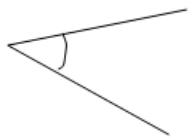
U12 – Lines, Angles and Shapes

Angles

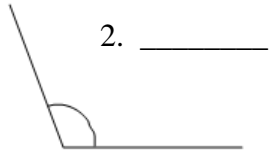
No Calculator Allowed

Section A

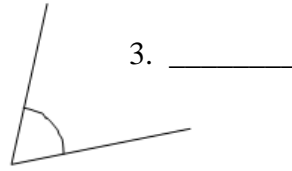
Say what type of angles each of these are. Choose from acute, obtuse, reflex, right.



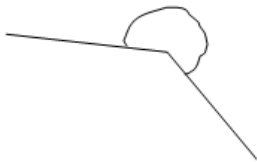
1. _____



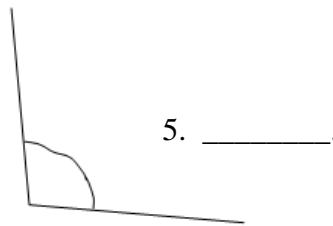
2. _____



3. _____



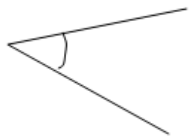
4. _____



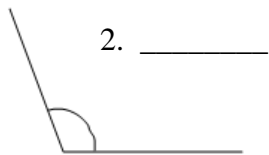
5. _____

Section B

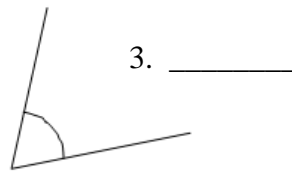
Estimate the size of these angles in degrees.



2. _____



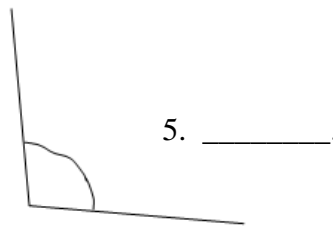
2. _____



3. _____



4. _____



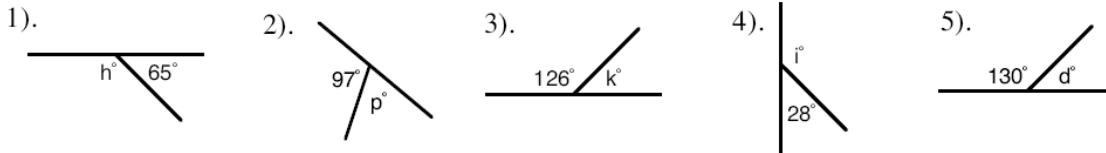
5. _____

U12 – Lines, Angles and Shapes

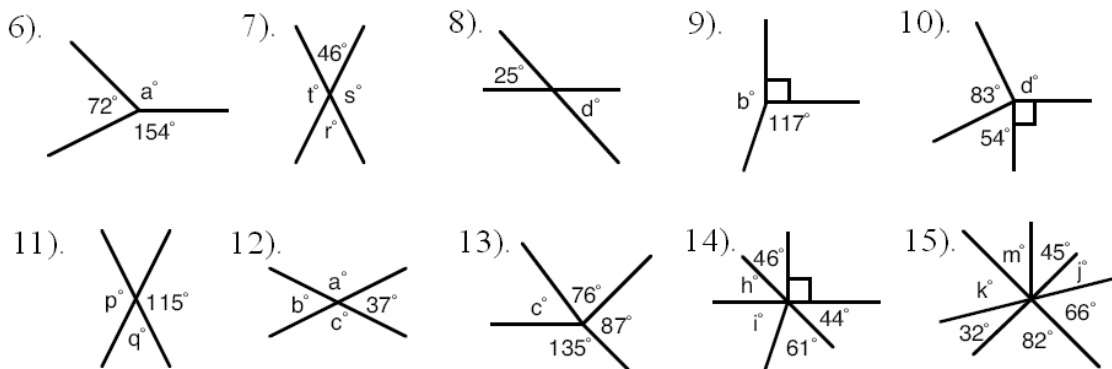
Angle Facts

Calculator Allowed

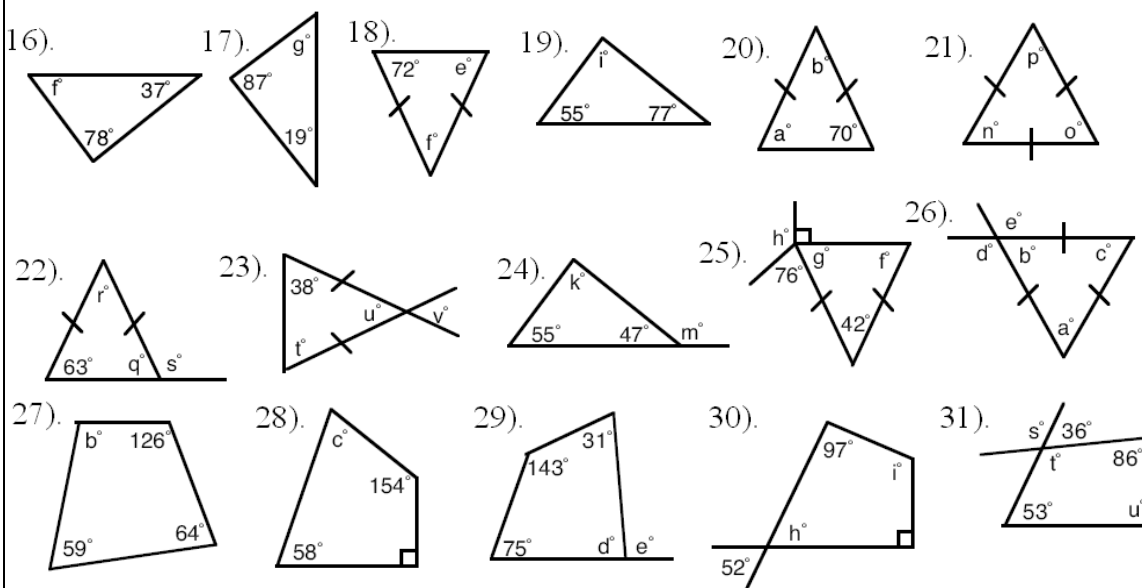
Find the size of the angle marked by the letters in each diagram.
(Remember angles on a line add to 180°)



Find the size of the angles marked by letters in each diagram.
(Remember: Vertically Opposite Angles are equal & Angles at a point add to 360°)



Find the size of the angles marked by letters in each diagram.
(Remember: Angles in a triangle add up to 180° and Angles in a quadrilateral add to 360°)



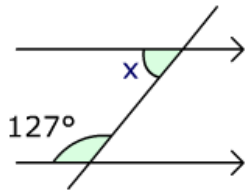
U12 – Lines, Angles and Shapes

Angle Facts

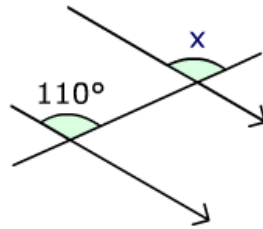
Calculator Allowed

Q1 - Z, C and F angles

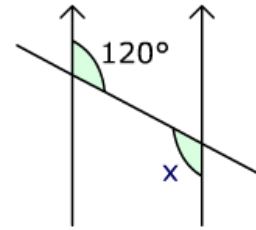
Find angle x.



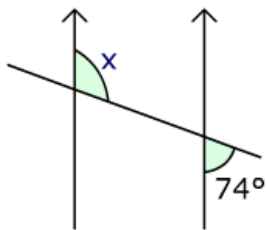
$x = \text{[]}^\circ$ [1]



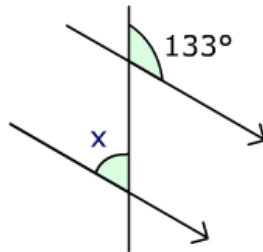
$x = \text{[]}^\circ$ [1]



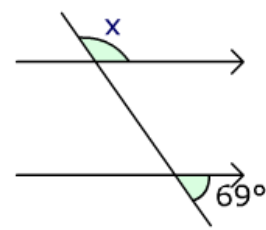
$x = \text{[]}^\circ$ [1]



$x = \text{[]}^\circ$ [1]



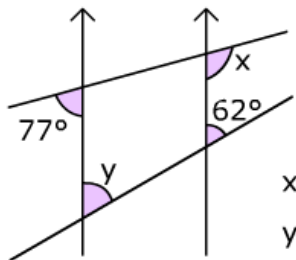
$x = \text{[]}^\circ$ [1]



$x = \text{[]}^\circ$ [1]

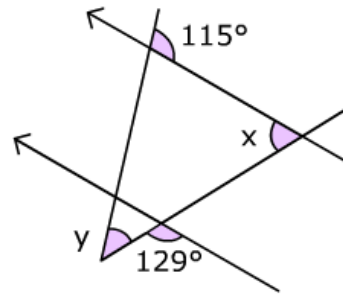
Q2 - Harder questions

Find angles x and y.



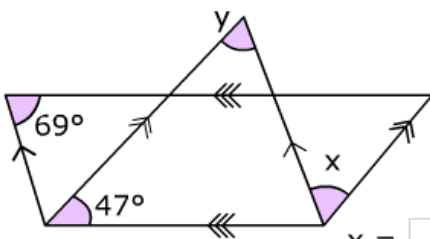
$x = \text{[]}^\circ$ [1]

$y = \text{[]}^\circ$ [1]



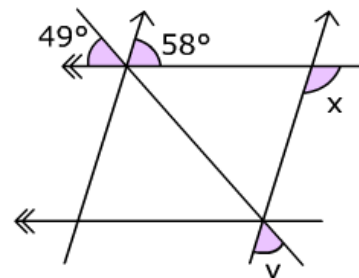
$x = \text{[]}^\circ$ [1]

$y = \text{[]}^\circ$ [1]



$x = \text{[]}^\circ$ [1]

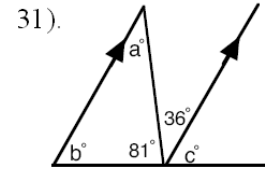
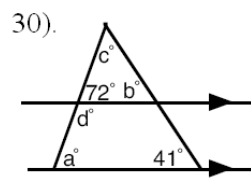
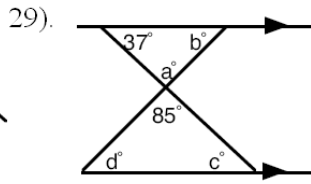
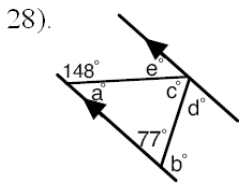
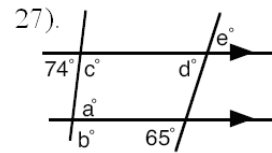
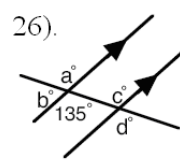
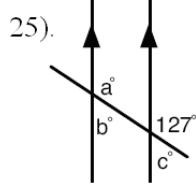
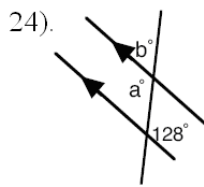
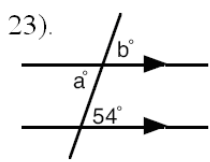
$y = \text{[]}^\circ$ [1]



$x = \text{[]}^\circ$ [1]

$y = \text{[]}^\circ$ [1]

Find the value of the letters. **Give a reason with each answer, there is space on the back of this page.** (Where there is more than one letter to find, find the missing letters in alphabetical order).



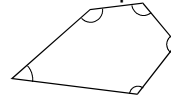
U12 – Lines, Angles and Shapes

Polygons

Calculator Allowed

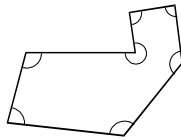
1. Any quadrilateral can be split into 2 triangles.

(a) Explain how you know that the angles inside a quadrilateral add up to 360°



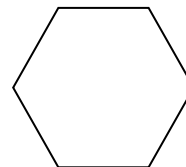
(b) What do the angles inside a pentagon add up to?

(c) What do the angles inside a heptagon (7-sided shape) add up to?
Show your working.



2. Calculate the size of an interior angle of a regular hexagon

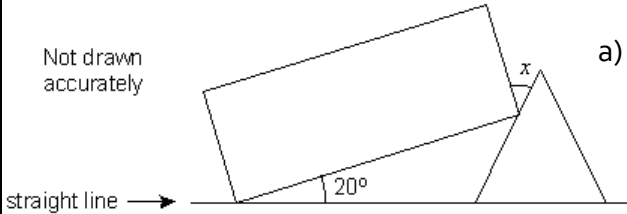
What is the size of its exterior angle?



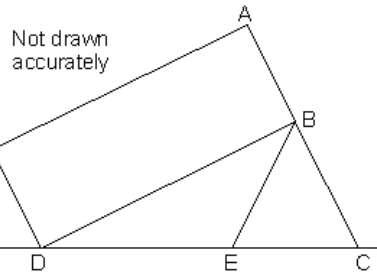
U12 – Lines, Angles and Shapes
Angles Problems
Calculator Allowed

1. The diagram shows a rectangle that just touches an equilateral triangle.

Not drawn accurately



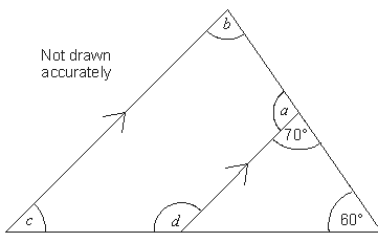
a) Find the size of the angle marked x



b) Now the rectangle just touches the equilateral triangle so that ABC is a straight line. Show that triangle BDE is isosceles.

2. Look at the diagram, work out the sizes of the angles marked with letters.

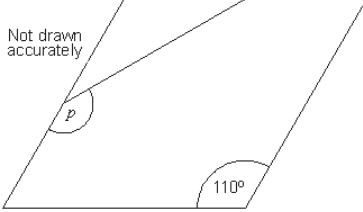
Not drawn accurately



$a = \dots\dots\dots^\circ$
 $b = \dots\dots\dots^\circ$
 $c = \dots\dots\dots^\circ$
 $d = \dots\dots\dots^\circ$

Give reasons for your answers

3. The diagram shows a rhombus.

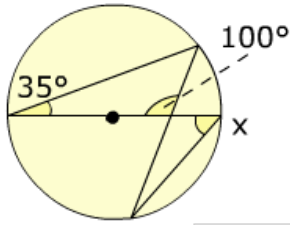


The midpoints of two of its sides are joined with a straight line.
What is the size of angle p ?

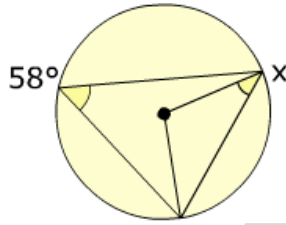
$p = \dots\dots\dots^\circ$ Give reasons for your answer

U12 – Lines, Angles and Shapes
Circle Theorems
Calculator Allowed

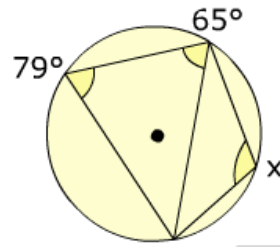
Find the angle x in each circle.



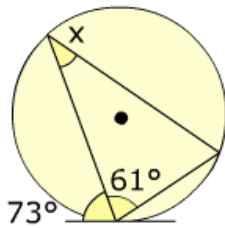
$x =$ $^\circ$ [1]



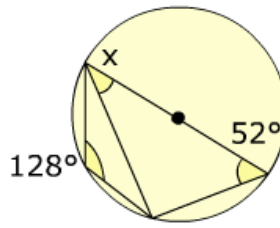
$x =$ $^\circ$ [1]



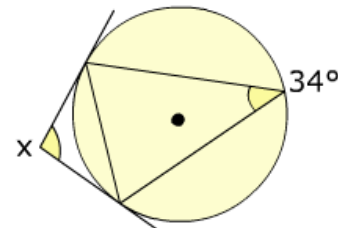
$x =$ $^\circ$ [1]



$x =$ $^\circ$ [1]



$x =$ $^\circ$ [1]



$x =$ $^\circ$ [1]

Q2 - Harder question

The line RCT is a tangent to the circle.

Angle $ADC = 141^\circ$.

Angle $OCB = 39^\circ$.

Angle $TCD = 20^\circ$.

Work out:

Angle $RCB =$ $^\circ$ [1]

Angle $ABC =$ $^\circ$ [1]

Angle $OAD =$ $^\circ$ [3]

