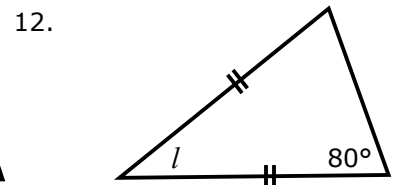
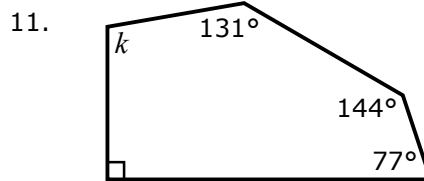
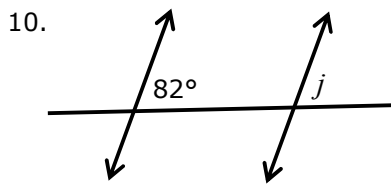
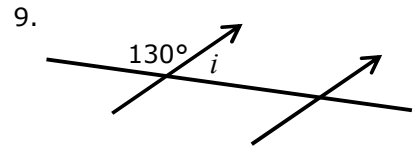
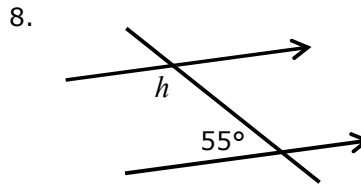
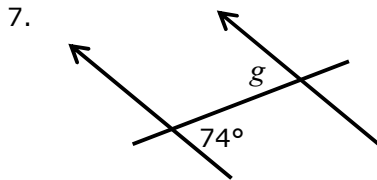
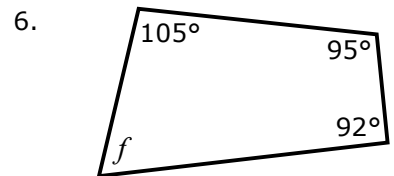
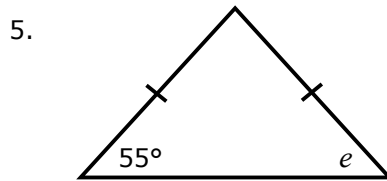
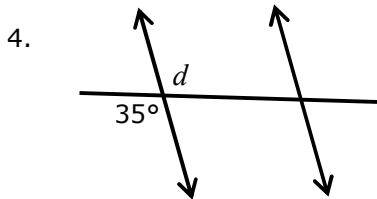
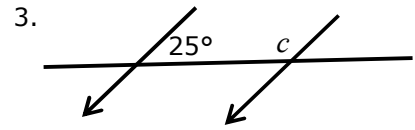
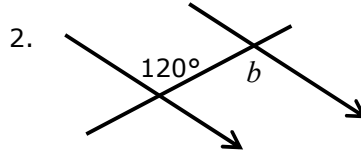
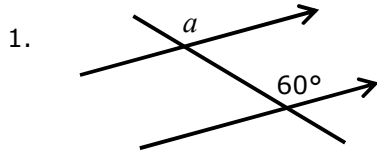
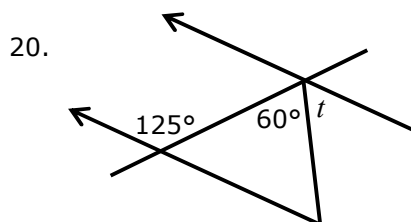
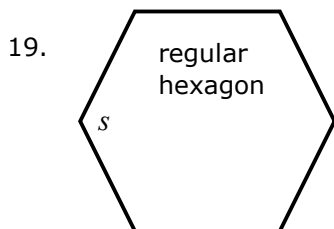
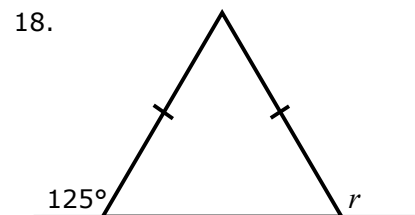
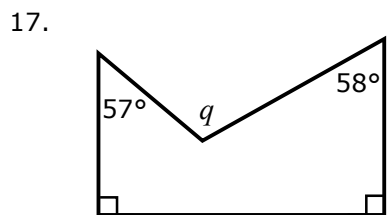
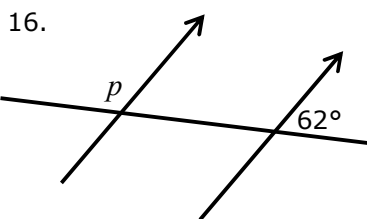
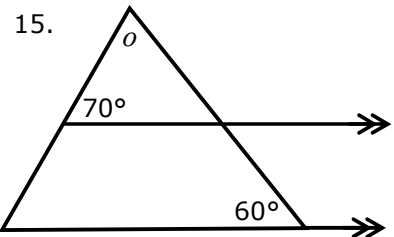
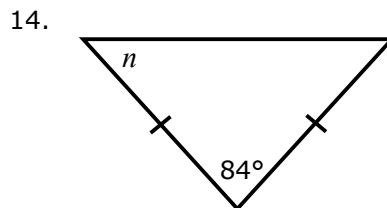
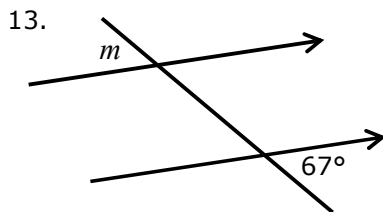


## Basic Geometry #4 parallel lines, isosceles and polygons

One Step Problems: Find the values of the unknown angles, giving the reason.



Harder Problems: Give the values of the unknown angles, giving **all** reasons.



## Answers : Basic Geometry #4 parallel lines, isosceles and polygons

1.  $a = 60^\circ$  Corresponding angles are equal
  2.  $b = 120^\circ$  Alternate angles are equal
  3.  $c = 180 - 25 = 155^\circ$  Cointerior angles add to  $180^\circ$
  4.  $d = 35^\circ$  Vertically opposite angles are equal
  5.  $e = 55^\circ$  Base angles isosceles triangles are equal
  6.  $f = 360 - 105 - 95 - 92 = 68^\circ$  Interior angles of a quadrilateral add to  $360^\circ$
  7.  $g = 180 - 55 = 74^\circ$  Alternate angles are equal
  8.  $h = 180 - 55 = 125^\circ$  Cointerior angles add to  $180^\circ$
  9.  $i = 180 - 130 = 50^\circ$  Angles on a straight line add up to  $180^\circ$
  10.  $j = 82^\circ$  Corresponding angles are equal
  11.  $(5 - 2) \times 180 = 540$  Interior angles of a 5-sided polygon (pentagon)  
 $k = 540 - 131 - 90 - 144 - 77 = 98^\circ$
  12.  $l = 180 - 80 - 80 = 20^\circ$  Base angles isosceles and triangles add to  $180^\circ$
- Note: Questions marked with an asterisk (\*) can also be done with the steps in reverse order*
13.  $m = 67^\circ$  Corresponding angles then Vertically opposite \*
  14.  $n + n + 84 = 180$   $n = 48^\circ$  Base angles isosceles and triangles add to  $180^\circ$
  15. right angle top triangle =  $60^\circ$  Corresponding angles are equal  
 $o = 180 - 70 - 60 = 50^\circ$  Angles in a triangle add up to  $180^\circ$
  16. angle beside  $p = 62^\circ$  Corresponding angles are equal  
 $p = 180 - 62 = 118^\circ$  Angles on a straight line add up to  $180^\circ$  \*
  17.  $(5 - 2) \times 180 = 540^\circ$  Interior angles of a 5-sided polygon (pentagon)  
opposite  $q = 540 - 57 - 58 - 90 - 90 = 245^\circ$   
 $q = 360 - 245 = 115^\circ$  Angles at a point add up to  $360^\circ$
  18.  $r = 125^\circ$  By symmetry  
*or angles on a line =  $180^\circ$ , base angles isosceles are equal, angles on a line =  $180^\circ$*
  19.  $(6 - 2) \times 180 = 720^\circ$  Interior angles of a 6-sided polygon (hexagon)  
 $q = 720 \div 6 = 120^\circ$  Regular means all the interior angles are the same
  20. Beside  $60^\circ = 180 - 125 = 55^\circ$  Cointerior angles add to  $180^\circ$   
 $t = 180 - 60 - 55 = 65^\circ$  Angles on a straight line add up to  $180^\circ$   
*or by  $60 + t = 125$  as alternate angles are equal*