



1)  $a + b = 180^\circ$

True

If angle  $a$  was increased by  $50^\circ$ , then it would equal  $40^\circ$

True

If angle  $a$  was decreased by  $75^\circ$ , then it would equal  $10^\circ$

False. It would equal  $15^\circ$ .

If angle  $b$  was increased by  $30^\circ$ , then angle  $a$  would equal  $50^\circ$

False. If  $b$  was increased by  $30^\circ$ , it would equal  $120^\circ$ .

This would mean angle  $a$  would equal  $60^\circ$ .

2) Angle  $a = 154^\circ$

Angle  $b = 44^\circ$

Angle  $c = 150^\circ$

3) Answers will vary. Both angles should be acute angles. Angle  $b$  should be smaller than angle  $a$ . Both angles should sum together to make  $90^\circ$ , e.g.  $a = 60^\circ$  and  $b = 30^\circ$ .

1) Could be angles  $a$ ,  $b$  and  $c$ :

Set 4: all angles add to make  $180^\circ$

Could not be angles  $a$ ,  $b$  and  $c$ :

Set 1: angles add to make  $183^\circ$

Set 2: angles add to make  $180^\circ$ , however, angle  $b$  and angle  $c$  can not both be  $45^\circ$  as angle  $b$  is larger than angle  $c$ .

Set 3: angles add to make  $180^\circ$ , however, angle  $a$  is given as  $89^\circ$ , which is not a right angle.

2) Nizar is correct. When all given angles are added together the sum is  $292^\circ$ .

$360^\circ - 292^\circ = 68^\circ$

3) False. Five  $80^\circ$  angles around a point can not sum to make  $360^\circ$  (five multiplied by  $80^\circ$  would equal  $400^\circ$ ).

If there were 5 equal angles around a point they would need to each measure  $72^\circ$ .



1) Angle  $a$ :

All given angles add to  $304^\circ$ .

Angle  $a$  ( $360^\circ - 304^\circ$ ) =  $56^\circ$

Angle  $b$ :

$360^\circ \div 6 = 60^\circ$

Angle  $c$ :

$a + b = 116^\circ$

$180 - 116^\circ = 64^\circ$

Angle  $c = 64^\circ$

2) When investigating angles around a point, the following whole-number equal angles can be formed:

2 equal angles:  $360^\circ \div 2 = 180^\circ$

5 equal angles:  $360^\circ \div 5 = 72^\circ$

9 equal angles:  $360^\circ \div 9 = 40^\circ$

3 equal angles:  $360^\circ \div 3 = 120^\circ$

6 equal angles:  $360^\circ \div 6 = 60^\circ$

10 equal angles:  $360^\circ \div 10 = 36^\circ$

4 equal angles:  $360^\circ \div 4 = 90^\circ$

8 equal angles:  $360^\circ \div 8 = 45^\circ$

3) Red:  $120^\circ$

Green:  $18^\circ$

Yellow:  $60^\circ$

Blue:  $162^\circ$

