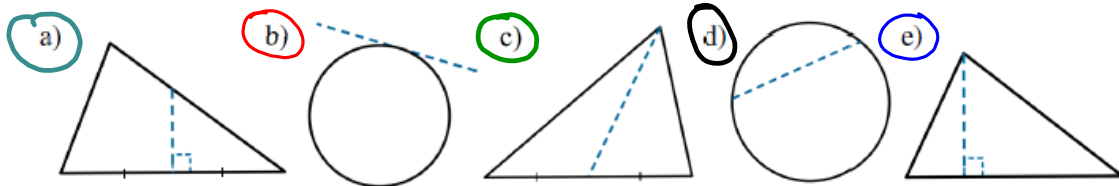


Solutions

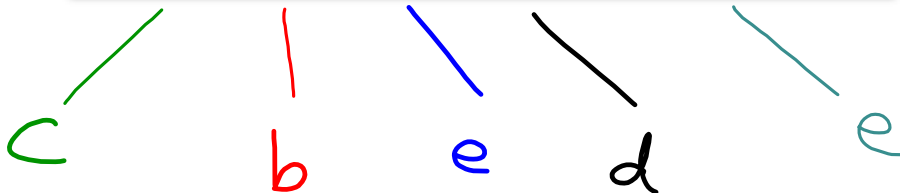
Page 286 #s 1, 3, 4, 5, 8, 12abef, 13ab

1. Match the dashed line in each diagram with its corresponding term.



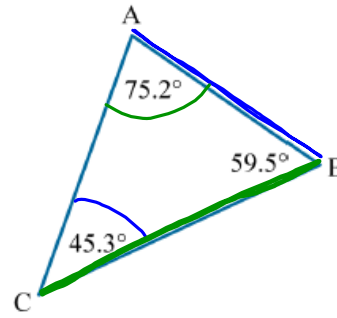
Terms:

median tangent altitude chord perpendicular bisector



3. Consider triangle ABC shown on the right.

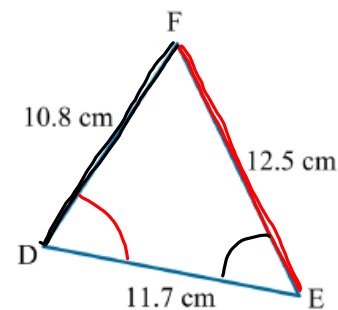
- Which side of the triangle has the greatest length? How do you know?
- Which side of the triangle is the shortest? How do you know?



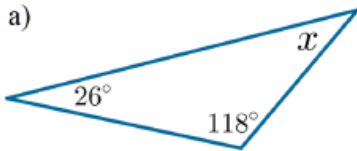
- Side length BC - it is opposite the LARGEST angle.
- Side length AB - it is opposite the SMALLEST angle.

4. Consider triangle DEF shown on the right.

- At which vertex is the greatest interior angle? How do you know?
- At which vertex is the smallest interior angle? How do you know?



- vertex D - opposite the LONGEST Side length
- vertex E - opposite the SHORTEST Side length

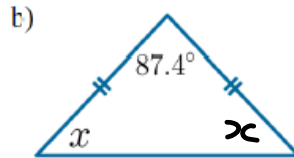
5. Determine the value of x .

$$x + 118 + 26 = 180$$

$$x + 144 = 180$$

$$x + 144 - 144 = 180 - 144$$

$$x = 36^\circ$$

isosceles \triangle

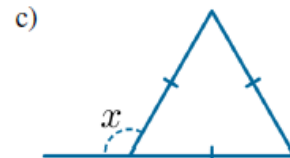
$$x + x + 87.4 = 180$$

$$2x + 87.4 = 180$$

$$2x + 87.4 - 87.4 = 180 - 87.4$$

$$\frac{2x}{2} = \frac{92.6}{2}$$

$$x = 46.3$$

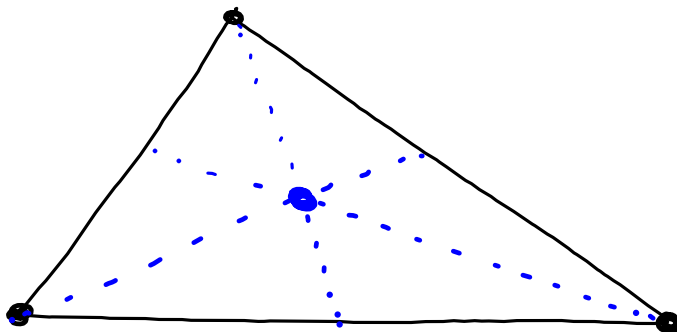
equilateral \triangle
 \Rightarrow interior = 60°

$$x + 60 = 180$$

$$x + 60 - 60 = 180 - 60$$

$$x = 120^\circ$$

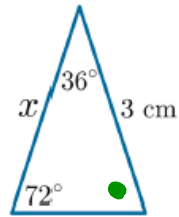
8. The runways at an airport form an acute triangle (all angles are less than 90°). A wind direction indicator is to be installed within the triangle such that its distance from each vertex is the same. Describe how knowledge of triangle properties could be helpful in locating the point where the wind direction indicator should be installed.



If we draw all 3 medians, the point where they intersect will be equidistant from each vertex.

12. Determine the value of x .

a)

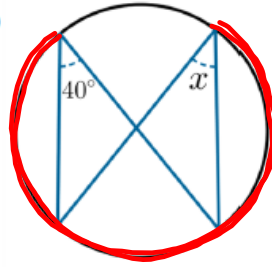


- $+ 72 + 36 = 180$
- $+ 108 = 180$
- $+ 108 - 108 = 180 - 108$
- $= 72^\circ$

\Rightarrow isosceles triangle

$\Rightarrow x = 3 \text{ cm}$

b)

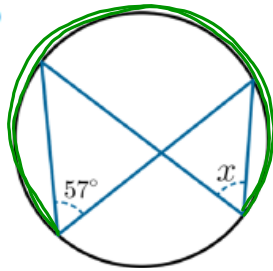


inscribed
angles are
equal in value

$\Rightarrow x = 40^\circ$

12. Determine the value of x .

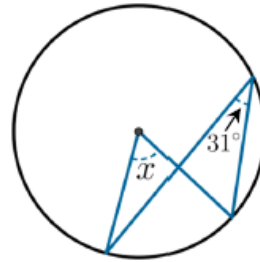
e)



inscribed angles
are equal

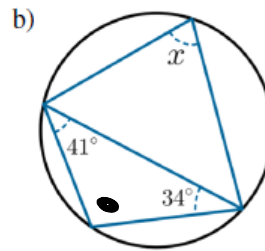
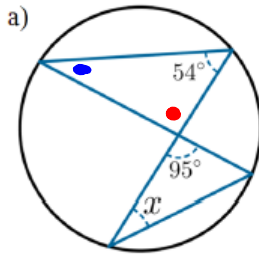
$\Rightarrow x = 57^\circ$

f)



central angle is
double the angle on
the same arc

$\Rightarrow x = 2(31)$
 $x = 62^\circ$

13. Determine the value of x .

- $= 95^\circ$ (opposite angles)

- $+ 54 + 95 = 180$

- $+ 149 = 180$

- $= 180 - 149$

- $= 31^\circ$

$\Rightarrow x = 31^\circ$
(inscribed angles equal)

- $+ 41 + 34 = 180$

- $+ 75 = 180$

- $= 180 - 75$

- $= 105^\circ$

$x + 105 = 180$
(opposite angles in a cyclic quadrilateral)

$x = 180 - 105$

$x = 75^\circ$