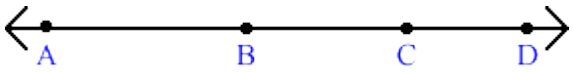
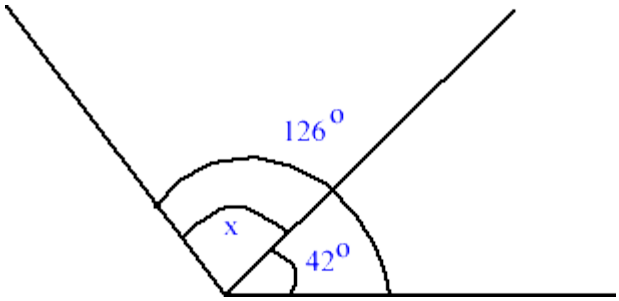
Review Exercise Set 26

Exercise 1: Find the complementary and supplementary angles of a 35° angle.

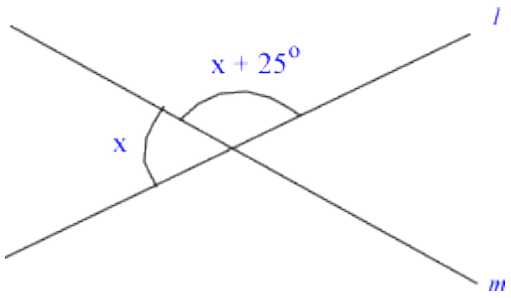
Exercise 2: Given that $m\left(\overline{AB}\right)=5\,cm$, $m\left(\overline{CD}\right)=3\,cm$, and $m\left(\overline{AD}\right)=12\,cm$, find $m\left(\overline{BC}\right)$.



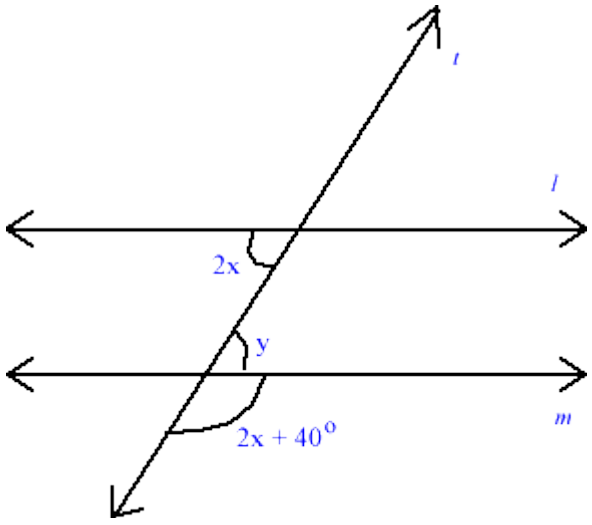
Exercise 3: Find the measurement of angle "x", $m\left(\angle x\right)$.



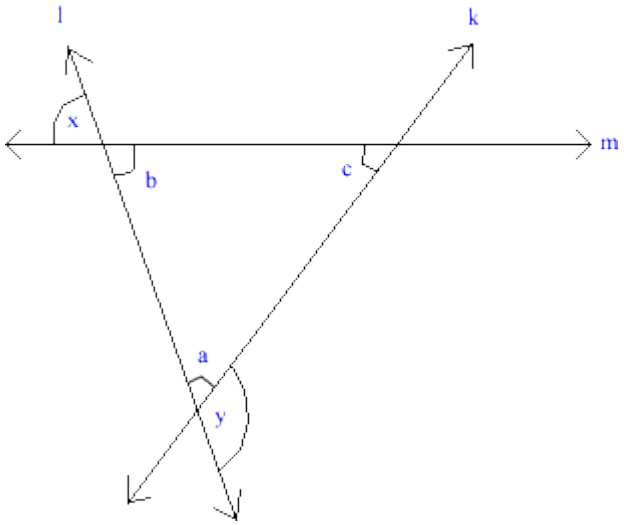
Exercise 4: Find the value of x.



Exercise 5: Given that lines l and m are parallel, find x and y.



Exercise 6: Given that $m(\angle y) = 95°$ and $m(\angle y) = 24°$, find the measurements of angles a, b, and x.



Review Exercise Set 26 Answer Key

Exercise 1: Find the complementary and supplementary angles of a 35° angle.

Complementary angles must add up to equal 90°.

Let x = the unknown angle.

x + 35° = 90°
x = 90° - 35°
x = 55°

The complementary angle to 35° is 55°.

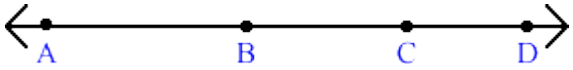
Supplementary angles must add up to equal 180°.

Let x = the unknown angle.

x + 35° = 180°
x = 180° - 35°
x = 145°

The supplementary angle to 35° is 145°.

Exercise 2: Given that $m\left(\overline{AB}\right)=5\,cm$, $m\left(\overline{CD}\right)=3\,cm$, and $m\left(\overline{AD}\right)=12\,cm$, find $m\left(\overline{BC}\right)$.

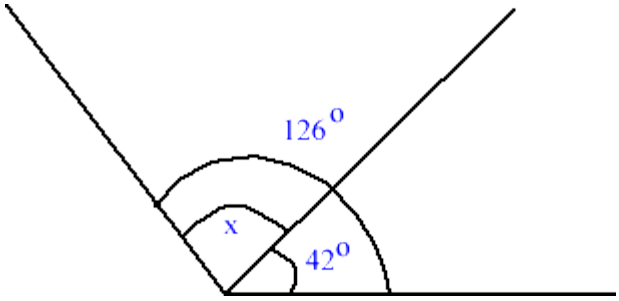


The sum of the three line segments $m\left(\overline{AB}\right)$, $m\left(\overline{BC}\right)$, and $m\left(\overline{CD}\right)$ must equal the length of the line segment $m\left(\overline{AD}\right)$

Let x = the length of the unknown line segment $m\left(\overline{BC}\right)$

$$m\left(\overline{AB}\right)+m\left(\overline{BC}\right)+m\left(\overline{CD}\right)=m\left(\overline{AD}\right)$$
$$5\,cm+x+3\,cm=12\,cm$$
$$x+8\,cm=12\,cm$$
$$x=12\,cm-8\,cm$$
$$x=4\,cm$$

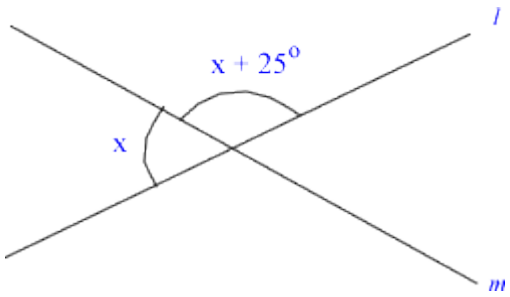
Exercise 3: Find the measurement of angle "x", $m(\angle x)$.



We know from the picture that the sum of the two angles is equal to 126°, so we can setup our equation as:

x + 42° = 126°
x = 126° - 42°
x = 84°

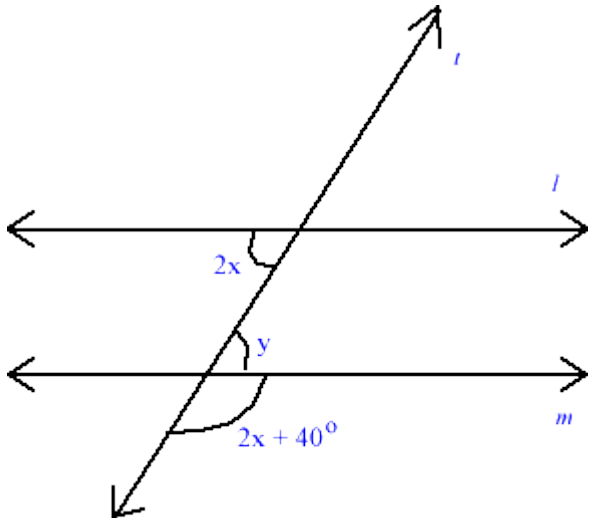
Exercise 4: Find the value of x.



x and x + 25° are supplementary angles so their sum must equal 180°

x + x + 25° = 180°
2x + 25° = 180°
2x = 180° - 25°
2x = 155°
x = 155° ÷ 2
x = 77.5°

Exercise 5: Given that lines l and m are parallel, find x and y.



2x and y are alternating interior angles so their measurements must be the same.

$2x = y$

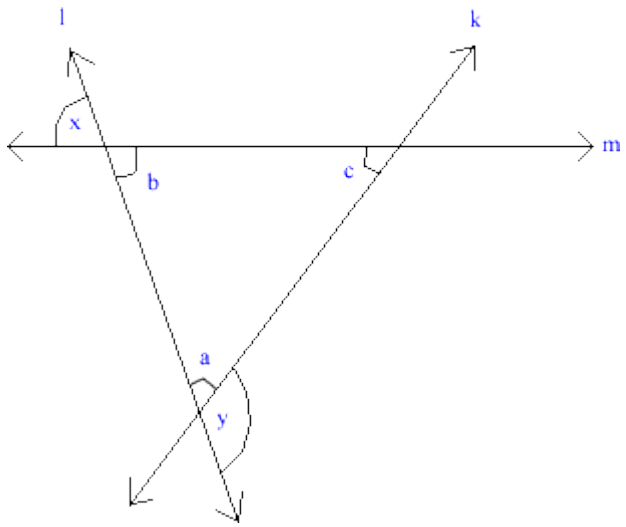
y and 2x + 40° are supplementary angles so their sum must equal 180°.

$y + 2x + 40° = 180°$

Since we know from our first equation that 2x = y, we can substitute the 2x in for y in the second equation. This will reduce the equation down to having only one unknown variable.

$y + 2x + 40° = 180°$
$2x + 2x + 40° = 180°$
$4x + 40° = 180°$
$4x = 180° - 40°$
$4x = 140°$
$x = 140° \div 4$
$x = 35°$

Exercise 6: Given that $m(\angle y) = 95°$ and $m(\angle y) = 24°$, find the measurements of angles a, b, and x.



Angles a and y are supplementary angles so their sum is 180°

a + y = 180°
a + 95° = 180°
a = 180° - 95°
a = 85°

Angles a, b, and c are the interior angles of a triangle, formed by the intersection of the three lines, so their sum must equal 180°. We know angles a and c so we can substitute in their measurements and solve for b.

a + b + c = 180°
85° + b + 24° = 180°
b + 109° = 180°
b = 180° - 109°
b = 71°

Angles x and b are vertical angles so their measurements must be the same.

x = b
x = 71°