Activating Prior Knowledge
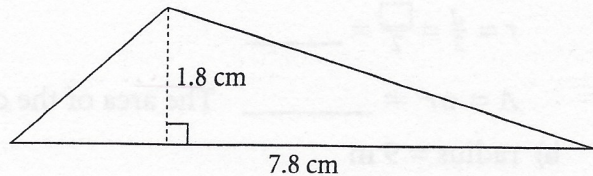
Area of Two-Dimensional Shapes

To calculate the area of this triangle,
use the formula Area = $\frac{1}{2}$ × base × height
or $A = \frac{1}{2}bh$.

Substitute $b = 7.8$ and $h = 1.8$.

$A = \frac{1}{2}bh = \frac{1}{2}(7.8 \times 1.8) = 7.02$

The area is about 7 cm², to the nearest square centimetre.

✓ Check

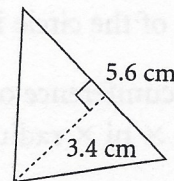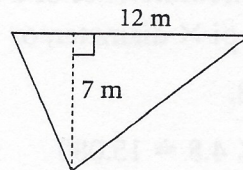1. Calculate the area of each triangle.

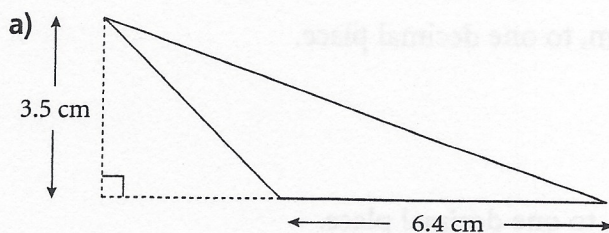   a) $A = \frac{bh}{2} = \dfrac{\boxed{}}{2} = $ _____

      The area is _____ m².

   b) $A = \frac{bh}{2}$

      The area is _____.

2. Calculate the area of each triangle.
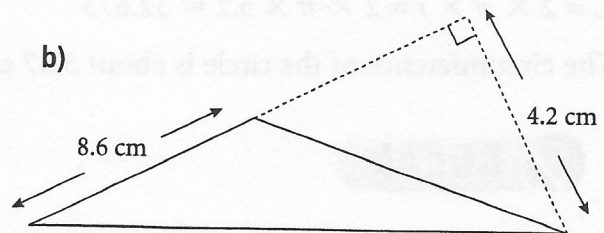
   a)

   $b = $ _____ $h = $ _____

   $A = $ _____

   b)

   $b = $ _____ $h = $ _____

   $A = $ _____

To calculate the area of a circle with diameter 14 cm, use the
formula Area = π × radius² or $A = \pi r^2$. The diameter of the circle
is 14 cm, so the radius is 7 cm.

Substitute $r = 7$ cm.

$A = \pi r^2 = \pi \times 7^2 \doteq 153.938$

The area is about 154 cm², to the nearest square centimetre.

Tip

For π,
use the π key on
a calculator.

✅ Check

3. Calculate the area of each circle, to the nearest square unit.

a) diameter = 24 cm

$$r = \frac{d}{2} = \frac{\square}{2} = \underline{\hspace{2cm}}$$

$A = \pi r^2 \doteq \underline{\hspace{2cm}}$ The area of the circle is _____, to the nearest square _____.

b) radius = 9 m

$A = \pi r^2 \doteq \underline{\hspace{2cm}}$ The area of the circle is _____, to the nearest square _____.

c) diameter = 11 mm The area of the circle is _____, to the nearest square _____.

d) radius = 8 km The area of the circle is _____, to the nearest square _____.

Circumference of a Circle

To calculate the circumference of a circle with diameter 4.8 cm, use the formula
Circumference = pi × diameter, or $C = \pi d$.

Substitute $d = 4.8$.

$C = \pi \times d = \pi \times 4.8 \doteq 15.080$

The circumference of the circle is about 15.1 cm, to one decimal place.

To calculate the circumference of a circle with radius 5.2 cm, use the formula
Circumference = 2 × pi × radius or $C = 2\pi r$.

Substitute $r = 5.2$.

$C = 2 \times \pi \times r = 2 \times \pi \times 5.2 \doteq 32.673$

The circumference of the circle is about 32.7 cm, to one decimal place.

✅ Check

4. Calculate the circumference of each circle, to one decimal place.

a) $d = 12$ cm $C = \pi \times d = \pi \times \underline{\hspace{2cm}} \doteq \underline{\hspace{2cm}}$

The circumference of the circle is _____, to one decimal place.

b) $r = 8$ m $C = 2 \times \pi \times r = 2 \times \pi \times \underline{\hspace{2cm}} \doteq \underline{\hspace{2cm}}$

The circumference of the circle is _____, to one decimal place.

c) $d = 5.6$ mm The circumference of the circle is _____, to one decimal place.

d) $r = 3.8$ m The circumference of the circle is _____, to one decimal place.
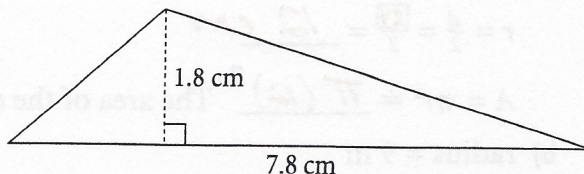
Area of Two-Dimensional Shapes

To calculate the area of this triangle, use the formula $\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$ or $A = \frac{1}{2}bh$.

Substitute $b = 7.8$ and $h = 1.8$.

$A = \frac{1}{2}bh = \frac{1}{2}(7.8 \times 1.8) = 7.02$

The area is about 7 cm², to the nearest square centimetre.

(triangle diagram: height 1.8 cm, base 7.8 cm)

✓ Check

(handwritten notes in speech bubbles: "Notice that the units for areas are squared" and "Las unidades de las áreas siempre son cuadradas")

1. Calculate the area of each triangle.

   a) $A = \frac{bh}{2} = \frac{12 \times 7}{2} = \frac{84}{2} =$ _____

   The area is _____ **42** _____ m².

   (triangle diagram: 12 m, 7 m)

   b) $A = \frac{bh}{2} = \frac{(5.6)\,cm \times (3.4)\,cm}{2} = \frac{19.04\,cm^2}{2}$

   The area is _____ **9.52 cm²** _____.

   (triangle diagram: 5.6 cm, 3.4 cm)

2. Calculate the area of each triangle.

   a) *(triangle diagram: 3.5 cm, 6.4 cm)*

   $b =$ ___**6.4**___ $h =$ ___**3.5**___

   $A =$ ___**11.2 cm²**___

   b) *(triangle diagram: 8.6 cm, 4.2 cm — handwritten "ESTA ES LA BASE")*
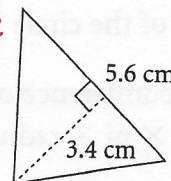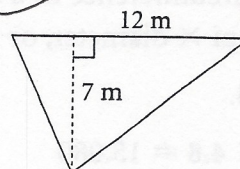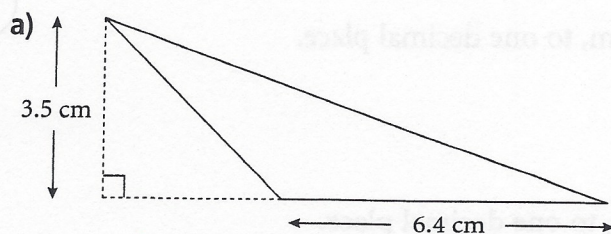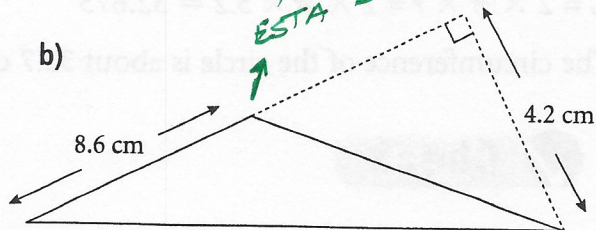
   $b =$ ___**8.6 cm**___ $h =$ ___**4.2 cm**___

   $A =$ ___**18.02 cm²**___

To calculate the area of a circle with diameter 14 cm, use the formula $\text{Area} = \pi \times \text{radius}^2$ or $A = \pi r^2$. The diameter of the circle is 14 cm, so the radius is 7 cm.

(handwritten: "Área de un Círculo")

Substitute $r = 7$ cm.

$A = \pi r^2 = \pi \times 7^2 \doteq 153.938$

The area is about 154 cm², to the nearest square centimetre.

Tip
For π, use the π key on a calculator.

✓ Check

3. Calculate the area of each circle, to the nearest square unit.

a) diameter = 24 cm

$r = \frac{d}{2} = \frac{24}{2} =$ ___12 cm___

$A = \pi r^2 \doteq$ ___$\pi(12)^2$___ The area of the circle is ~~3~~ *452.38 cm²*, to the nearest square ~~3~~ *452 cm²*.

b) radius = 9 m

$A = \pi r^2 \doteq$ ___$\pi(9)^2$___ The area of the circle is *254.4*, to the nearest square *255 m²*.

c) diameter = 11 mm   The area of the circle is *17.27*, to the nearest square *17 mm²*.

Radio
= 11/2
= 5.5

d) radius = 8 km   The area of the circle is *25.13*, to the nearest square *25 Km²*.

Circumference of a Circle

To calculate the circumference of a circle with diameter 4.8 cm, use the formula Circumference = pi × diameter, or $C = \pi d$.

Substitute $d = 4.8$.

$C = \pi \times d = \pi \times 4.8 \doteq 15.080$

The circumference of the circle is about 15.1 cm, to one decimal place.

To calculate the circumference of a circle with radius 5.2 cm, use the formula Circumference = 2 × pi × radius or $C = 2\pi r$.

Substitute $r = 5.2$.

$C = 2 \times \pi \times r = 2 \times \pi \times 5.2 \doteq 32.673$

The circumference of the circle is about 32.7 cm, to one decimal place.

✓ Check

4. Calculate the circumference of each circle, to one decimal place.

a) $d = 12$ cm $C = \pi \times d = \pi \times$ ___12 cm___ $\doteq$ ___37.69 cm___

The circumference of the circle is ___*37.7*___, to one decimal place.

b) $r = 8$ m   *Are equal!* $C = 2 \times \pi \times r = 2 \times \pi \times$ ___8 m___ $\doteq$ ___50.26___

The circumference of the circle is ___*50.3 m*___, to one decimal place.

c) $d = 5.6$ mm   The circumference of the circle is ___*17.6 mm*___, to one decimal place.

d) $r = 3.8$ m   The circumference of the circle is ___*23.9 m*___, to one decimal place.