Warm Up Grade 7

Dec. 1, 2023

Use mental math

1)  12 x 5     2)  151 - 29     too much off     3) 24 x 1.5

half   Double     151 - 30     half   double

6   x10        121 (+1)      12 x 3

**60**           **122**        **36**

From last day

1) Find the height    area = 165 m²

17 m

15 m
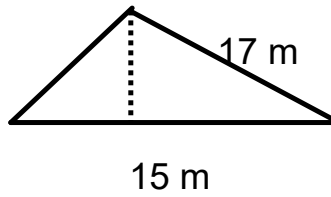
$$h_\triangle = \frac{2A}{b}$$

$$= \frac{2\,(165\,m^2)}{(15\,m)}$$

$$= \frac{330\,m^2}{15\,m}$$

$$h = 22\,m$$

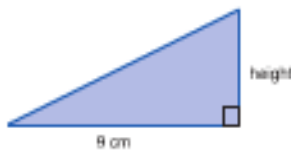<span style="color:magenta">**Homework**</span> <span style="color:green">**Solutions**</span>
Homework Solutions Page 145 -146  # 1, 2, 4

**5.** Use the given area to find the base or height of each triangle.
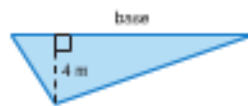How could you check your answers?

a) Area — 18 cm²　　　b) Area — 32 m²　　　c) Area — 480 mm²

height　　8 cm

base　　4 m

height　　30 mm

$$A = \frac{b \times h}{2}$$

$$18 = \frac{9 \times \_}{2}$$

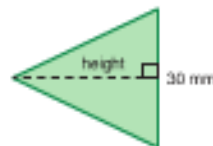$$\frac{36}{2} = \frac{9 \times h}{2}$$

$$h = 4$$

$$A = \frac{b \times h}{2}$$

$$32 = \frac{b \times 4}{2}$$

$$64 = b \times 4$$

$$\frac{64}{4} = b$$

$$16 = b$$

$$A = \frac{b \times h}{2}$$

$$480 = \frac{30 \times \_}{2}$$

$$480 = 15 \times h$$

$$\frac{480}{15} = h$$

$$32 = h$$

**6.** Use 1-cm grid paper.

   a) Draw 3 different triangles with each base and height.
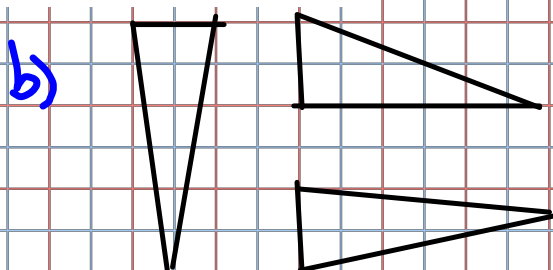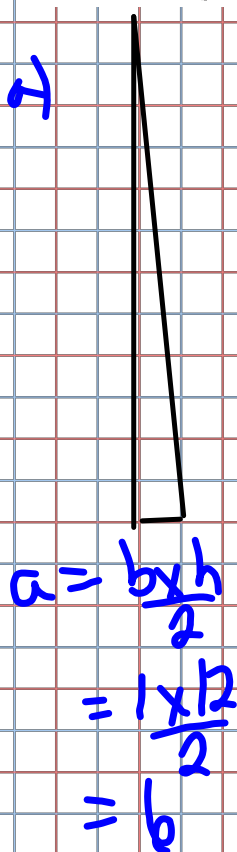
      i) base: 1 cm; height: 12 cm
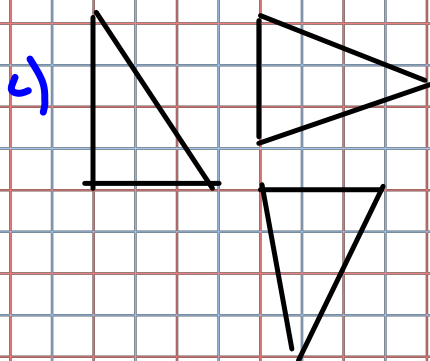
      ii) base: 2 cm; height: 6 cm

      iii) base: 3 cm; height: 4 cm

   b) Find the area of each triangle you drew in part a.

     What do you notice?

a)

b)

c)

$$a = \frac{b \times h}{2}$$

$$= \frac{1 \times 12}{2}$$

$$= 6$$

$$A = \frac{b \times h}{2}$$

$$= \frac{2 \times 6}{2}$$

$$= 6 \text{ cm}^2$$

$$A = \frac{b \times h}{2}$$

$$= \frac{3 \times 4}{2}$$

$$\frac{12}{2}$$

$$= 6 \text{ cm}$$

**3**

**7.** On 1-cm grid paper, draw two different triangles with each area below.
Label the base and height each time.
How do you know these measures are correct?
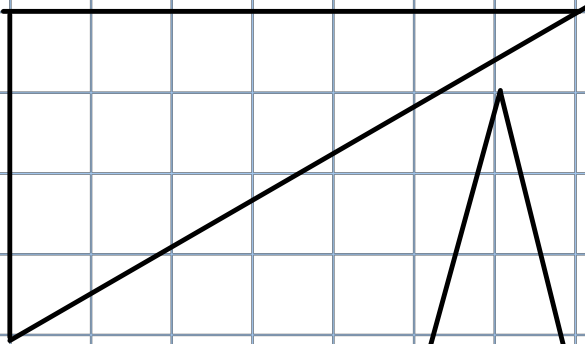a) 14 cm²                    b) 10 cm²                    c) 8 cm²
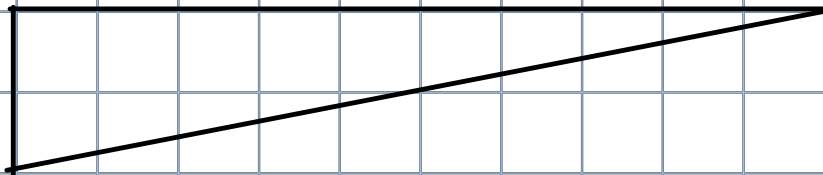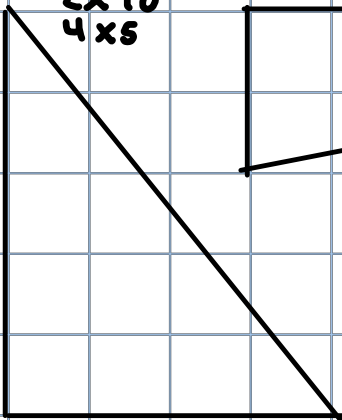
a) $A = 14$
so $b \times h = 28$

1 x 28
2 x 14
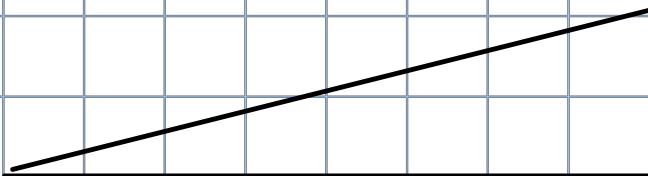4 x 7

b) $A = 10$
so $b \times h = 20$
1 x 20
2 x 10
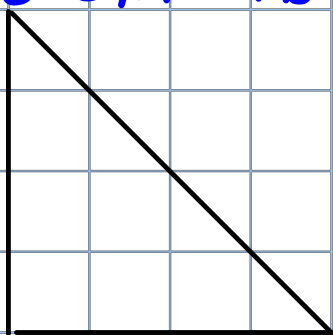4 x 5

c) $A = 8$
so $b \times h = 16$

4

**8. a)** Draw any triangle on grid paper.
What happens to the area of the triangle in each case?
  i) the base is doubled
  ii) both the height and the base are doubled
  iii) both the height and the base are tripled
**b)** What could you do to the triangle you drew in part a to triple its area?
Explain why this would triple the area.

$b = 2, h = 4$

$A = \dfrac{2 \times 4}{2}$

$= 4$

a) $b = 4, h = 4$

$A = \dfrac{4 \times 4}{2}$

$= 8$

a) if the base is doubled, the area doubles

c) $b = 4 \quad h = 8$

$A = \dfrac{4 \times 8}{2}$

$= 16$

If the base and height both double, then the area is 4 times larger or quadrupled
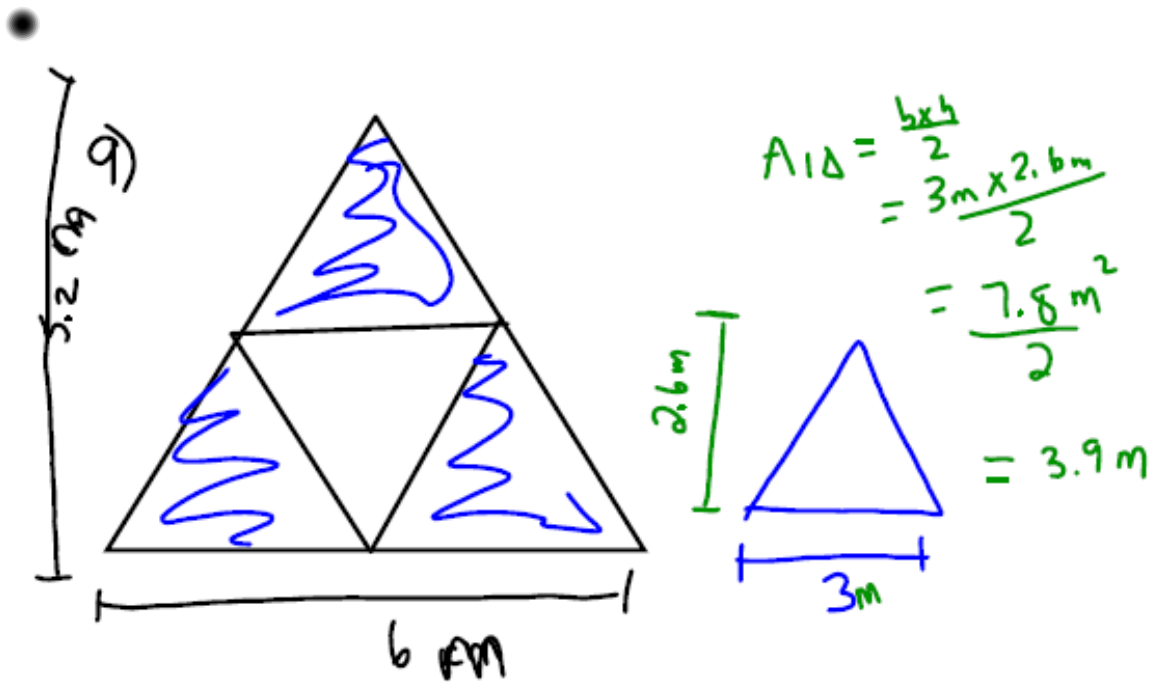
d) $b = 6 \quad h = 12$

$A = \dfrac{b \times h}{2}$

$= \dfrac{6 \times 12}{2}$

$= 36$

If the base and height are both tripled, then the area is 9 times larger.

e) If you want triple the area triple either the height OR the base

9)

5.2 cm



6 cm

2.6 m

3m

$A_{1\triangle} = \frac{b \times h}{2}$

$= \frac{3m \times 2.6m}{2}$

$= \frac{7.8 m^2}{2}$

$= 3.9 m$

a)   $A_{3\triangle} = 3 \times 3.9$
            $= 11.7 m^2$
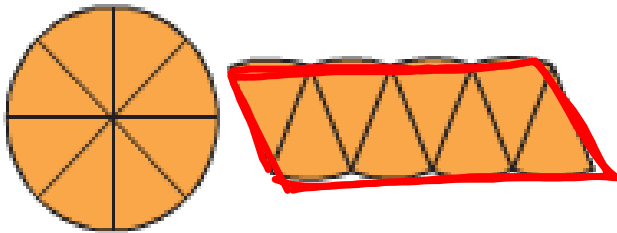
b)   $11.7 \div 5.5 = 2.12\overline{72}$

            buy 3 cans

Discuss pg. 149 with students

Suppose a circle was cut into 8 congruent sectors.

The 8 sectors were then arranged to approximate a parallelogram.

Sector - a part of the circle

The more congruent sectors we use, the closer the area
of the parallelogram is to the area of the circle.
Here is a circle cut into 24 congruent sectors.
The 24 sectors were then arranged to approximate a parallelogram.

$A = b \times h$

½ Arcula

Half the circumference

} = r
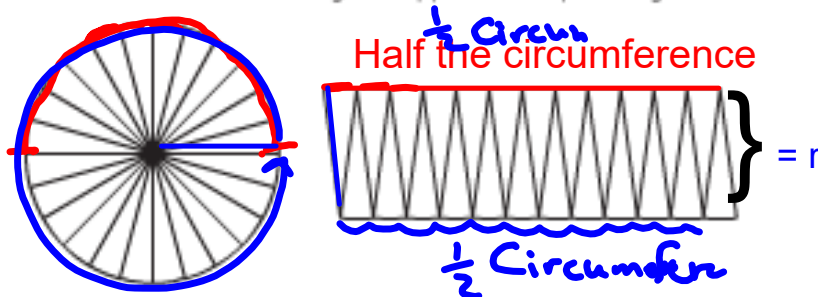
½ Circumference

A=b xh

= (Half the circumference) x (r)

=    π r       x    r

= π r$^2$

Circumference = $2\pi r$

Half of Circumference = $\dfrac{2\pi r}{2}$

Half of Circumference = $1\pi r$

where r$^2$ = rxr
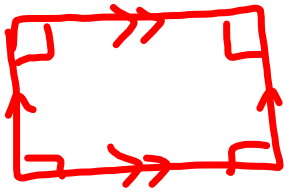
Rectangle
Special
parallelogram
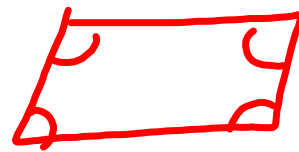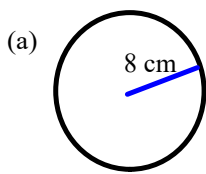
$\angle$ NOT 90°
Parallelogram

## Area of a Circle

We have a formula to find the area of a circle,

$$\text{Area of Circle} = \pi\, r^2 \quad\longrightarrow\quad \text{Area of Circle} = \pi \times r \times r$$

That is the area of a circle is $\pi$ times the radius squared(which means radius x radius).
$\pi$ always $= 3.14$
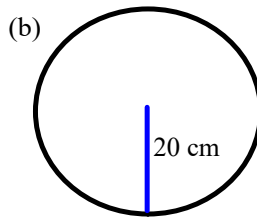
Examples:
Find the area for each of the following:

(a)

8 cm

$r = 8\,cm$

$A_o = \pi \times r \times r$

$= (3.14) \times (8cm) \times (8cm)$

$= 200.96\,cm^2$

(b)

20 cm

$r = 20\,cm$

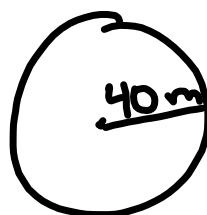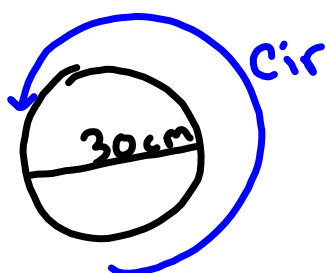$A_o = \pi \times r \times r$

$= 3.14 \times 20cm \times 20cm$

$= 1256\,cm^2$

(c)
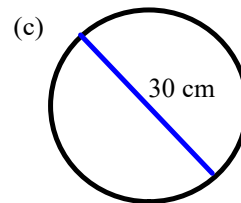
30 cm

$d = 30\,cm$

$r = \dfrac{d}{2} = \dfrac{30}{2} = 15cm$

$A_o = \pi \times r \times r$

$= 3.14 \times (15) \times (15)$

$= 706.5\,cm^2$

9

Cir

30cm

40m

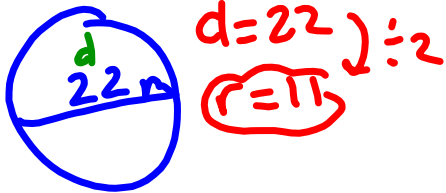$d = 30cm$

$r = ?$    $r = \dfrac{d}{2}$   $\dfrac{30}{2} = 15cm$

$C = \pi d$

$= 3.14 \times 30\ cm$

$= 94.2\ cm$

Find the area and Circumference of the following

$d = 22$

$22 \, m$

$d = 22 \; ) \div 2$

$r = 11$

$8 \, cm$

$Cir = \pi d$
$= 3.14 \times 22 \, m$

$Cir = 2\pi r$
$= 2 \times 3.14 \times 8$

$A_0 = \pi \times r \times r$
$3.14 \times 11 \times 11$
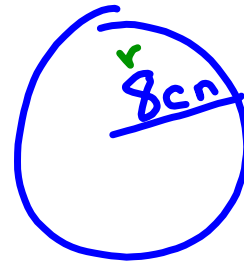
$A_0 =$

# Class / Homework

Page 151
   #1, #2, #3,#5(Show work)
                    Test Thursday Wednesday