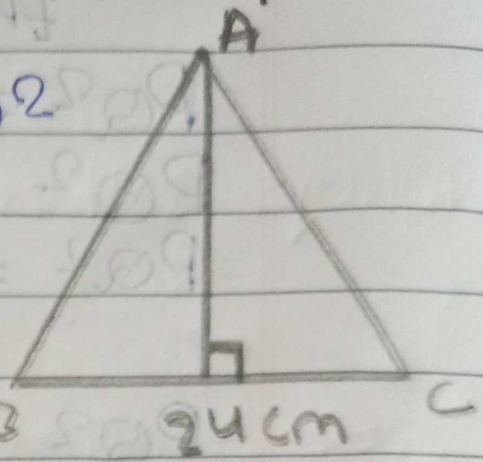
⑥ The base of an isosceles triangle is 24 cm and its area is 192 cm² then find its semi perimeter

→ Area of triangle = 192 cm²

$\frac{1}{2} \times b \times h = 192$

$\frac{1}{2} \times 24 \times h = 192$



$h = \frac{192 \times 2}{24} = 16$ cm

In $\triangle ABD$

AD = 16, BD = 12

By Pythagoras $AB^2 = AD^2 + BD^2$

$a^2 = 16^2 + 12^2$

$a^2 = 400$

$a = \sqrt{400} = 20$

Semi perimeter $= \frac{AB + AC + BC}{2}$

$= \frac{20 + 20 + 24}{2}$

$= \frac{64}{2} = 32$ cm

(7) If the area of an equilateral triangle is $36\sqrt{3}$ cm^2 then find its perimeter

(8) The side of a triangle are 35, 54 and 61 cm respectivel Find the length of its longest altitude

(9) The side of a field are 41 m 40 m 9 m Find the number of rose beds that can be prepared in the field if each rose bed on an average needs 900 cm^2 space.

(7) Area of triangle $= \frac{\sqrt{3}}{4}(a^2) = 36\sqrt{3}$

$\frac{a^2}{4} = 36$

$\frac{a^2}{4} = 36$

$a^2 = 36 \times 4$

$a^2 = 144\ cm^2$

$a = \sqrt{144\ cm^2}$

$a = 12\ cm$

All sides are equal in the equilateral triangle

Therefore $a = 12\ cm$, $b = 12\ cm$, $c = 12\ cm$

Perimeter $= a + b + c = 36\ cm$

(8) $a = 35\ cm$

$b = 54\ cm$

$c = 61\ cm$

Area of triangle = $\sqrt{s(s-a)(s-b)(s-c)}$

$s = \frac{35+54+61}{2} = \frac{150}{2} = 75$

$s = 75\,cm$

Area = $\sqrt{75(75-35)(75-54)(75-61)}$

$= \sqrt{75 \times 40 \times 21 \times 14}$

$= \sqrt{5 \times 14 \times 5 \times 8 \times 3 \times 7 \times 2 \times 7}$

$= \sqrt{3 \times 5 \times 5 \times 2 \times 2 \times 5 \times 2 \times 7 \times 3 \times 7 \times 2}$

$= 5 \times 2 \times 3 \times 7 \times 2\sqrt{5}$

$= 420\sqrt{5}\,cm^2$

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

$420\sqrt{5}\,cm^2 = \frac{1}{2} \times 35 \times h$

$\frac{420\sqrt{5} \times 2}{35} = h$

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$= \frac{840\sqrt{5}}{35} = h$

$\therefore h = 24\sqrt{5}\ cm$ = longest altitude.

⑨ Area of triangle =

$\sqrt{s(s-a)(s-b)(s-c)}$

$s = \frac{41+40+9}{2} = \frac{90}{2} = 45\ m$

Area $= \sqrt{45(45-41)(45-40)(45-9)}$

$= \sqrt{45 \times 4 \times 5 \times 36}$

$= \sqrt{9 \times 5 \times 4 \times 5 \times 9 \times 4}$

$= 9 \times 5 \times 4$

$= 180\ m^2$

$= \frac{180}{1000}\ m^2$

$= 18000\ cm^2$

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No. of Rose beds = Total area / Area occupied 1 rose bed

$$= \frac{18000000}{9000} = 2000$$

No. of Rose beds = 2000

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