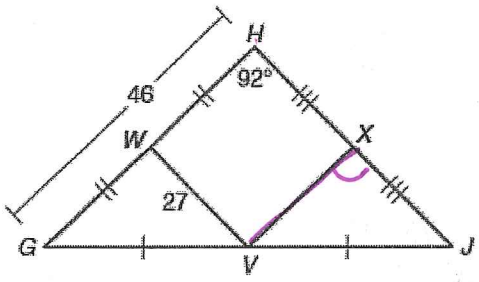
Geometry B: Late Semester Review/Senior Study Guide Name: Key

#1 Topic: Triangle Midsegments

Find each measure using the diagram below:



$VX =$ $\frac{46}{2} = 23$

$HJ =$ $27 \times 2 = 54$

$m\angle VXJ =$ $92°$

$XJ =$ 27

#2 Topic: Sum of Interior/Exterior Angles

Given: A **regular** dodecagon (12 sides)

(a) Find the sum of the interior angles.

$(12-2)180° = 1800°$

(b) Find the measure of each interior angle.

$\frac{1800}{12 \text{ 's}} = 150°$

(c) Find the sum of the exterior angles.

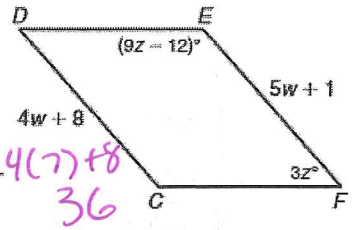
$360°$

(d) Find the measure of each exterior angle.

$\frac{366°}{12} = 30°$

#3 Topic: Parallelograms

***CDEF* is a parallelogram. Find each measure.**



$4w+8 = 5w+1$

$w = 7$

$4(7)+8$

36

CD

36

$m\angle F$

$3(16)° = 48°$

EF

36

$m\angle E$

$9(16)-12 = 132°$

$9z-12+3z = 180$

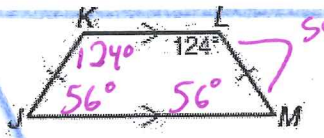
$12z = 192$

$z = 16$

Do not use this page!

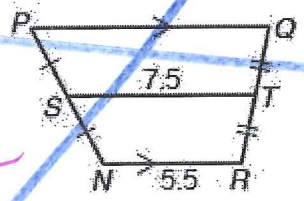
#4 Topic: Trapezoids

Find the measure of the three remaining angles.



supp.

Find PQ. = 9.5



7.5 × 2 − 5.5

#5 Topic: Rectangles, Rhombuses, Squares

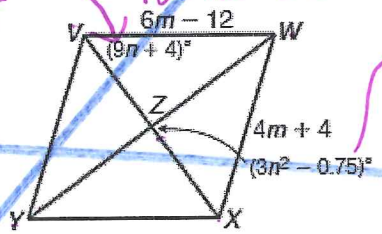
4 ≅ sides, diags ⊥) by diags ∠s bisected

$VWXY$ is a **rhombus**. Find each measure.

(6.5) + 4

53.5

48 − 12 = 36



$3n^2 - 0.75 = 90$

$\frac{3n^2}{3} = \frac{90.75}{3}$

$n^2 = 30.25$

$n = 5.5$

$XY =$ 36

$m\angle YVW =$ 53.5 × 2 = 107°

$m\angle VYX =$ 180 − 107 = 73°

$m\angle XYZ =$ $\frac{1}{2}(73°) = 36.5°$

$4m + 4 = 6m - 12$

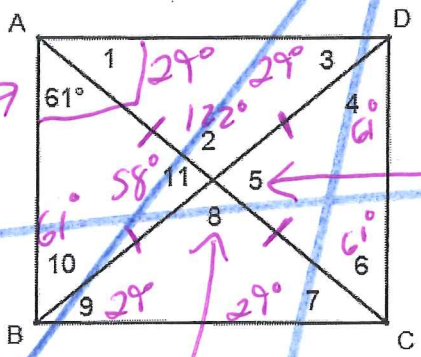
$16 = 2m$

$m = 8$

Find the numbered angles in rectangle $ABCD$.

corner ∠s = 90°

→ diags ≅ + bisect



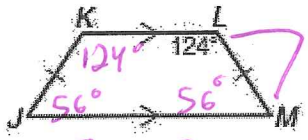
90 − 61 = 29°

180 − 61 × 2 = 58°

180 − 58 = 122°

#4 Topic: Trapezoids

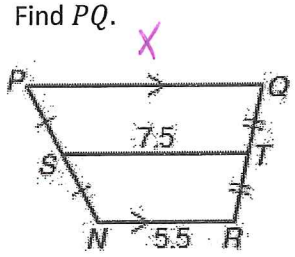
Find the measure of the three remaining angles.



S-PP.

base ∠s ≅ in isosc. trap

Find PQ.



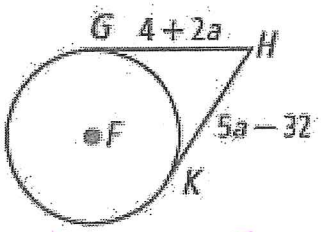
$\frac{5.5+x}{2} = 7.5$

$5.5+x = 15$

$x = 9.5 = PQ$

#5 Topic: Circles

Find GH



$4+2a = 5a-32$

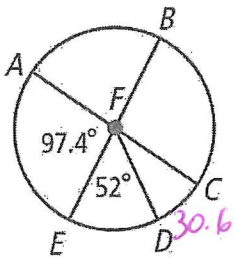
$36 = 3a$

$a = 12$

$GH = 4+2(12)$

$= 28$

Calculate the following measures:



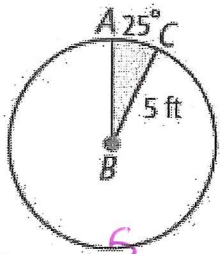
$m\widehat{AED} = 149.4°$

$m\widehat{BD} = 128°$

$m\widehat{CD} = 30.6°$

$m\widehat{AB} = 82.6°$

Calculate the area of sector ABC and the length of $\widehat{AC}$.



$\frac{A}{\pi(5)^2} = \frac{25}{360}$

$\frac{A}{25\pi} = \frac{5}{72}$

$72A = 125\pi$

$A = \frac{125\pi}{72}$

$\frac{L}{2\pi(5)} = \frac{5}{72}$

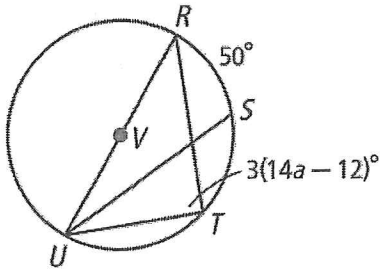
$72L = 50\pi$

$L = \frac{36\pi}{25}$

Find:

$m\angle RUS = 25°$

$50/2$



$a =$

$3(14a-12) = 90$

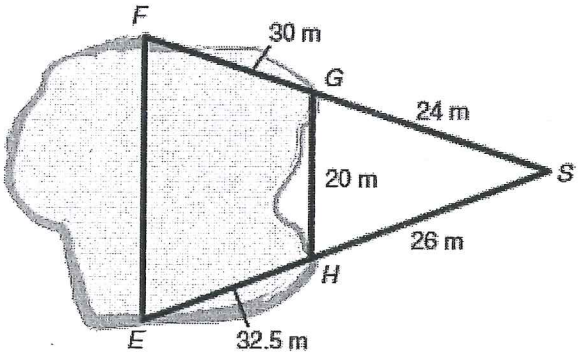
$14a-12 = 30$

$14a = 42$

$a = 3$

#6 Topic: Similar Triangles

To determine the longest distance across a lake, a surveyor locates the points below so that $\overline{EF} \parallel \overline{GH}$. Determine EF, the distance across the lake. If it helps, you may use the template to the side.



1. Locate a pair of ≅, corresponding ∠s: $\angle S \cong \angle S, \angle G \cong \angle F$
2. Write a similarity statement: $\Delta SGH \sim \Delta SFE$
3. Write proportions to help you solve the problem.

$$\frac{SG}{SF} = \frac{GH}{FE} = \frac{SH}{SE}$$

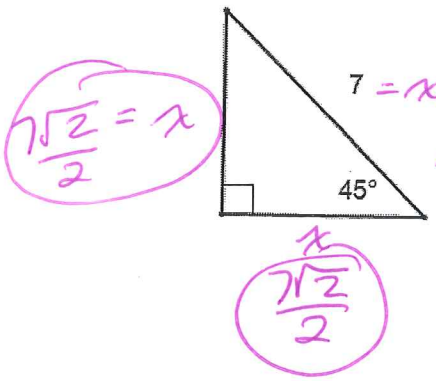
4. Determine EF from your proportions.

$$\frac{24}{54} = \frac{20}{x} \rightarrow 24x = 1080$$

$x = 45m = EF$

#7 Topic: Special Right Triangles

Find the missing sides of each special right triangle.

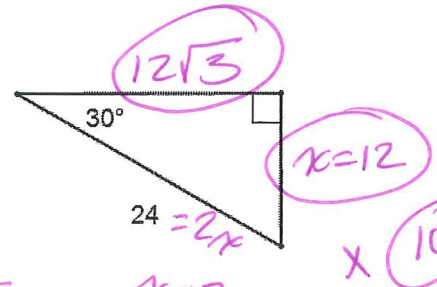


$7 = x\sqrt{2}$

$x = \frac{7}{\sqrt{2}}$

$x = \frac{7\sqrt{2}}{2}$

$\frac{7\sqrt{2}}{2} = x$

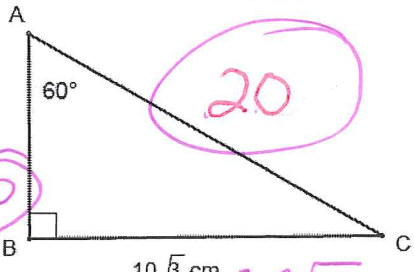


$12\sqrt{3}$

$24 = 2x$

$x = 12$

$x = 12$



$2x$

20

$10\sqrt{3} = x\sqrt{3}$

$x = 10$

x 10

Find the perimeter and area of this triangle:

$P = 10 + 20 + 10\sqrt{3} = (30 + 10\sqrt{3})\,cm$

$A = \frac{bh}{2} = \frac{10\sqrt{3} \cdot 10}{2} = 50\sqrt{3}\ cm^2$

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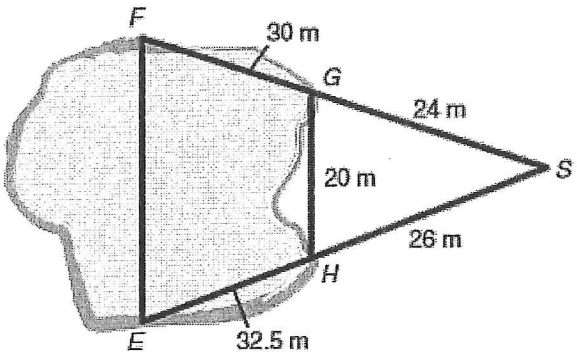

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$$\frac{SG}{SF} = \frac{GH}{FE} = \frac{SH}{SE}$$

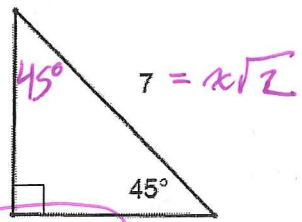
4. Determine EF from your proportions.

$$\frac{24}{54} = \frac{20}{x} \rightarrow 24x = 1080$$

$x = 45\text{m} = EF$

#7 Topic: Special Right Triangles

Find the missing sides of each special right triangle.

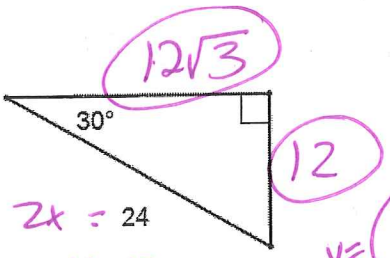


$7 = x\sqrt{2}$

$\frac{7\sqrt{2}}{2} = x$

$\frac{7\sqrt{2}}{2} = x$ $\quad x\sqrt{2} = 7$

$x = \frac{7}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{2}}{2}$

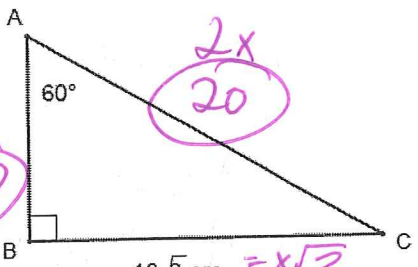


$12\sqrt{3}$

12

$2x = 24$

$x = 12$



$2x$

20

$y = 10$

$10\sqrt{3} = x\sqrt{3}$

$x = 10$

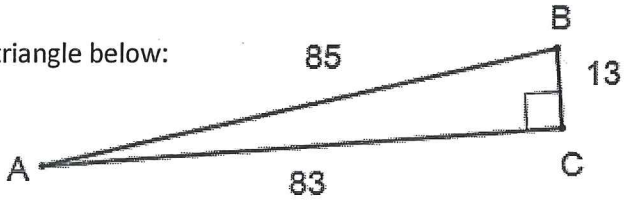
Find the perimeter and area of this triangle:

$P = 10 + 20 + 10\sqrt{3} = (30 + 10\sqrt{3})_{cm}$

$A = \frac{bh}{2} = \frac{10\sqrt{3} \cdot 10}{2} = 50\sqrt{3}\ cm^2$

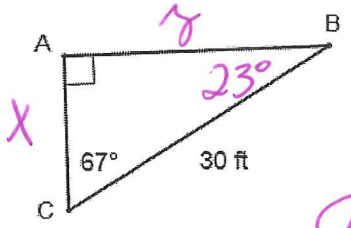
#8 Topic: Trigonometry

a) Write the following trig ratios given the triangle below:



$\sin A =$ $\frac{13}{85}$	$\sin B =$ $\frac{83}{85}$
$\cos A =$ $\frac{83}{85}$	$\cos B =$ $\frac{13}{85}$
$\tan A =$ $\frac{13}{83}$	$\tan B =$ $\frac{83}{13}$

b) Find the missing sides and angles of the triangles shown below:



$\sin 67 = \frac{y}{30}$

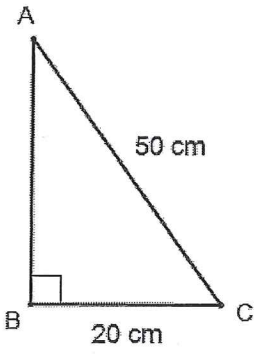
$y = 30 \sin 67$

$AB = 27.62$ ft

$\cos 67 = \frac{x}{30}$

$x = 30 \cos 67$

$AC \approx 11.72$ ft



$20^2 + x^2 = 50^2$

$x^2 = 2100$

$AB \approx 45.83$ cm

$\sin A = \frac{20}{50}$

$m\angle A = \sin^{-1}\left(\frac{20}{50}\right) = 24°$

$m\angle C = 90 - 24 = 66°$

#9 Topic: Areas, Volumes

a) A trapezoid has an area of 244 cm^2, one base with a length of 13 cm, and a height of 4 cm. Find the length of the other base.

$A = \frac{(b_1 + b_2)h}{2}$

$244 = \frac{(13 + b)4}{2}$ → $244 = 2(13 + b)$

$122 = 13 + b$

$b = 109$ cm

b) A circle has an area of $2401\pi\ cm^2$. Find its circumference.

$\pi r^2 = 2401\pi$

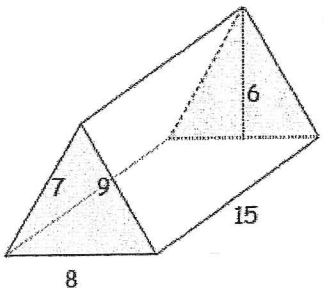
$r^2 = 2401$

$r = 49$

$C = 2\pi(49)$

$C = 98\pi$ cm

c) Calculate the surface area and volume of the following solids:



$SA = A_{bases} + A_{faces}$

$A = \frac{1}{2}(8)(6)$

$= 24$

$\times 2$

48

$15 \times 7 = 105$

$15 \times 8 = 120$

$15 \times 9 = 135$

360

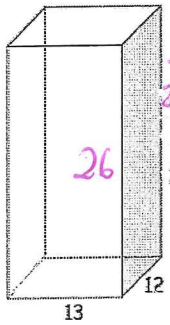
$SA = 360 + 48$

$= 408\ u^2$

$V = A_{base} h$

$= (24)(15)$

$= 360\ u^3$



$SA = A_b + A_f$

$2(12 \times 13) = 312$

$2(12 \times 26) = 624$

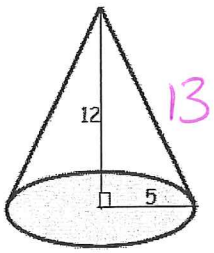
$2(13 \times 26) = 676$

1612

$SA = 1612\ u^2$

$V = 12 \cdot 13 \cdot 26$

$4056\ u^3$

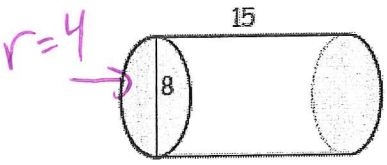


$SA = \pi(5)^2 + \pi(5)(13)$

$SA = 90\pi\ u^2$

$V = \frac{\pi(5)^2(12)}{3}$

$V = 100\pi\ u^3$



$SA = 2\pi(4)^2 + 2\pi(4)(15)$

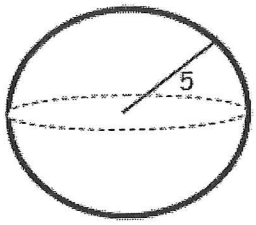
$= 32\pi + 120\pi$

$= 152\pi\ u^2$

$V = \pi(4)^2(15)$

$= \pi(16)(15)$

$= 240\pi\ u^3$



$SA = 4\pi(5)^2$

$= 100\pi\ u^2$

$V = \frac{4\pi(5)^3}{3}$

$= \frac{500\pi}{3}\ u^3$