Ms. Chan's Geometry Honors FINAL EXAM Review Solutions

(33) $n = ?$ equiangular polygon

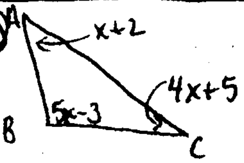
if each $\angle$ $m = 168°$

then each ext. $\angle = 12°$

and $\frac{360°}{12°} =$

30 sides

(34)



$m\angle B = ?$

$\angle A + \angle B + \angle C = 180°$

$10x = 180$

$x = 18$

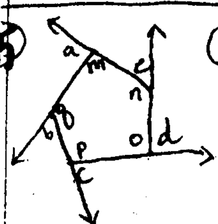
$\therefore m\angle B = 5(x) - 3$

$= 5(18) - 3$

$= 90 - 3$

$87°$

(35)



$(m+n+o+p+q) - (a+b+c+d+e) = ?$

$(n-2)(180) - 360$

$(5-2)(180) - 360$

$3(180) - 360$

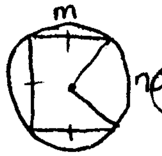
$540 - 360$

$180°$

(37) look @ your flowchart.... there are 5 properties of a llogram.

(38) rhombus ... look @ flowchart

(44)



$\cong$ chords intercept $\cong$ arcs.

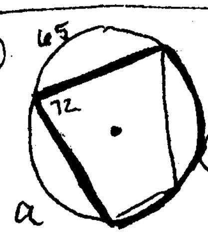
$360 - 70 = 290°$

$3 \cong$ arcs $= 290°$ so

$m = \frac{290}{3} = 96\frac{2}{3}°$

$96\frac{2}{3}°$

(45)



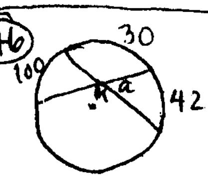
inscribed $\angle = \frac{1}{2}$ intercepted arc

$\therefore a = 360° - (65 + 144)$

$360 - 209$

$151°$

(46)



$a = \frac{100 + 42}{2}$

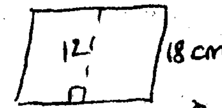
$a = \frac{142}{2} = 71°$

$k = 180 - 71$

$k = 109°$

$109°$

(51) $A = 228$ cm parallelogm. $P = ?$



$A = bh$

$228 = b(12)$

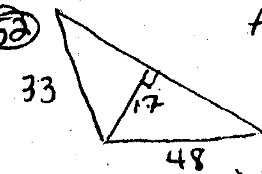
$19 = b$

$\therefore P = 2(19$

$P = 38 +$

$P = 74$

(52) $A = 204$ $P = ?$



$A = \frac{1}{2}bh$

$204 = \frac{1}{2}(b)(17)$

$408 = 17b$

$b = 24$ cm

$P = 33 + 48 + 24 = 105$

105

(53) $A_{Sector} = \frac{a}{360} \cdot \pi r^2$

$A = \frac{50}{360} \cdot \pi r^2$

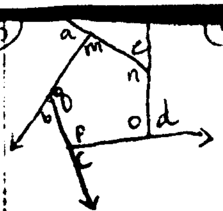
$5\pi = \frac{5}{36} \cdot \pi r^2$

$5 = \frac{5}{36} r^2$

$r^2 = 36;\ r = 6$

6 cm

[redacted]

3) 

$(a+b+c+d+e)=?$

$(n-2)(180)-360$

$(5-2)(180)-360$

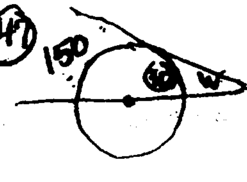
$3(180)-360$

$540-360$

180°

$k=109^\circ$

109°

(47) 

$w=\frac{150-30}{2}$

$w=\frac{120}{2}=60^\circ$

60°

(48) arc length $=\frac{a^\circ}{360}\cdot 2\pi r$

$100\cancel{\pi}=\frac{60}{360}\cdot 2\cancel{\pi}r$

$100=\frac{1}{6}\cdot 2r$

$100=\frac{1}{3}r$; $r=300$

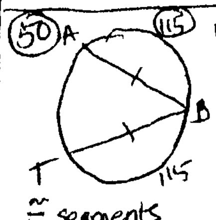
300

(49) $C=2\pi r$

$56=2\pi r$

$\frac{56}{2\pi}=r$; $r=\frac{28}{\pi}$

$\frac{28}{\pi}$

(50) 

$r=20$ cm

arc length $\widehat{AB}=?$

$\cong$ segments intercept $\cong$ arcs

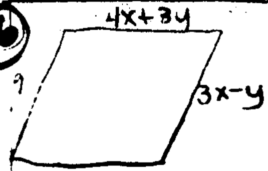
$\therefore \widehat{AB}=115^\circ$

arc length $=\frac{a}{360}\cdot 2\pi r$

arc length $=\frac{115}{360}\cdot 2\pi(20)$

arc length $=\frac{115}{360}\cdot 40\pi$

arc length $=\frac{115}{9}\pi$

(36) 

This is a parallelogram.

opp sides of a llogram are $\cong$:

$4x+3y=12$ and $3x-y=9$

you now have a system of eqns so eliminate one of your variables by multiplying.

$4x+3y=12 \rightarrow 4x+\cancel{3y}=12$

$3(3x-y=9)\rightarrow 9x-\cancel{3y}=27$

$13x=39$

$\boxed{x=3}$

Now substitute "x" in any eqn to get what $y=$s.

$4x+3y=12$

$4(3)+3y=12$

$12+3y=12$

$3y=0$

$y=0$ $\boxed{y=0}$

$x+y=?$

$3+0=3$

3

(54) 

$R=12$
$r=10$

$A=?$

Since 12° is missing, you still have $360-12$ or 348° remaining

$\therefore$ you have $\frac{348}{360}\pi(R^2-r^2)$

reduce by 12:

$\frac{29}{30}\pi(12^2-10^2)$

$\frac{29}{30}\pi(144-100)$

$\frac{29}{30}\pi(44)=\frac{29}{15}\pi(22)$

$\frac{638}{15}\pi$

(55) $A_{trapezoid}=375\ cm^2$

$h=15$, $b_1=24$, $b_2=?$

$A_{trap}=\frac{1}{2}(b_1+b_2)h$

$375=\frac{1}{2}(24+b_2)15$

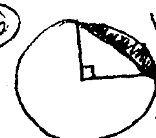
$375=\frac{15}{2}(24+b_2)$

$750=15(24+b_2)$

$50=24+b_2$; $b_2=26$

26 cm

26

(56) 

hypotenuse $=20$ cm

$A_{SR}=?$

$A_{SR}=$ sector $-\Delta$

$2r^2=20^2$

$2r^2=400$

$r^2=200$

$r=\sqrt{100}\sqrt{2}$

$r=10\sqrt{2}$

$A_{SR}=\frac{a}{360}\cdot\pi r^2-\frac{1}{2}bh$

$A_{SR}=\frac{90}{360}\cdot\pi(10\sqrt{2})^2-\frac{1}{2}($

$A_{SR}=\frac{1}{4}\pi(10^2\sqrt{2}^2)-\frac{1}{2}($

$A_{SR}=\frac{1}{4}\pi(100\cdot 2)-\frac{1}{2}($

$A_{SR}=\frac{1}{4}\pi(200)-\frac{1}{2}(200)$

$A_{SR}=50\pi-100$

$50\pi-100$

(56) $A_{SR}=$ Sector $-\Delta$

$A_{SR}=\frac{a}{360}\cdot\pi r^2-\frac{1}{2}bh$

$A_{SR}=\frac{90}{360}\cdot\pi(10\sqrt{2})^2-\frac{1}{2}(10\sqrt{2})^2$

$A_{SR}=\frac{1}{4}\pi(10^2(\sqrt{2})^2)-\frac{1}{2}(10^2)(\sqrt{2})^2$

$A_{SR}=\frac{1}{4}\pi(100\cdot 2)-\frac{1}{2}(100\cdot 2)$

$A_{SR}=\frac{1}{4}\pi(200)-\frac{1}{2}(200)$

$A_{SR}=50\pi-100$

57) $\sqrt{\frac{6}{5}} = \frac{}{\sqrt{5}}$

You can't have a radical in the denominator. To get rid of the $\sqrt{\ }$, square the bottom

$\frac{\sqrt{6}}{\sqrt{5}} \cdot \sqrt{5} =$

$\frac{\sqrt{6}}{\sqrt{5}} \cdot \frac{}{\sqrt{5}} = \frac{}{\sqrt{25}} = \frac{}{5}$

But whatever you do to the bottom, you also have to do to the top.

$\frac{\sqrt{6}}{5} \cdot \sqrt{5} = \frac{\sqrt{30}}{5}$

$\frac{\sqrt{30}}{5}$

58) $(4\sqrt{3})^2 + (2\sqrt{6})^2 \stackrel{?}{=} (6\sqrt{2})^2$

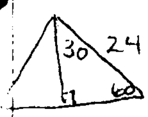
$(16 \cdot 3) + (4 \cdot 6) \stackrel{?}{=} (36 \cdot 2)$

$48 + 24 \stackrel{?}{=} 72$

$72 = 72$

yes, this is a right Δ

59) $A = ?$ equil. Δ; $s = 24$ cm



Now use 30-60-90 info... if hyp = 24 then short = 12 and long leg, or height, $= 12\sqrt{3}$.

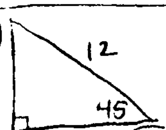
$A = \frac{1}{2}bh$

$A = \frac{1}{2}(24)(12\sqrt{3})$

$A = 144\sqrt{3}$

$144\sqrt{3}$

60)



$12 \frac{\sqrt{2}}{2} = 6\sqrt{2}$

$A = ?$

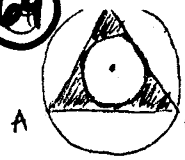
$A = \frac{1}{2}bh$

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

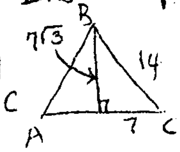
$A = \frac{1}{2}(36 \cdot 2)$

$A = 36 \text{ cm}^2$

64)



ΔABC is equilateral



$A = \frac{1}{2}bh$

$A = \frac{1}{2}(14)(7\sqrt{3})$

$A = 7(7\sqrt{3}) = 49\sqrt{3}$

$49\sqrt{3}$

65) $A_{cir.\odot} = \pi R^2$

$R = \frac{7\sqrt{3}}{3} \cdot 2 = \frac{14\sqrt{3}}{3}$

$A = \pi\left(\frac{14\sqrt{3}}{3}\right)^2$

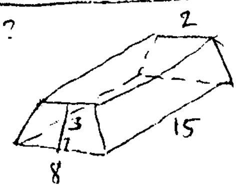
$A = \pi\left(\frac{196 \cdot 3}{9}\right) = \frac{196\pi}{3}$

66) $A_{ins\ \odot} = \frac{196\pi}{3} \cdot \frac{1}{4} =$

circum. $\odot$ is always 4x bigger than inscribed $\odot$!

$\frac{49}{3}\pi$

69) $V = ?$



$V = BH$

$V = \frac{1}{2}(b_1 + b_2)h \quad H$

$V = \frac{1}{2}(8+2)(3)(15)$

$V = \frac{1}{2}(10)(3)(15)$

$V = 225$

225

75) $V = \frac{1}{3}BH$

$V = \frac{1}{3} \cdot \frac{1}{2}(b_1 + b_2)hH$

$350 = \frac{1}{6}(12+18)h(10)$

$350 = \frac{1}{6}(30)(h)(10)$

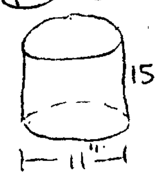
$350 = 50h$; $h = 7$ cm

7 cm

76) $S = ?$ $\pi = 3.14$

$S = 2B + $ Lateral stuff

$S = 2\pi r^2 + 2\pi r H$



$S = 2\pi\left(\frac{11}{2}\right)^2 + 2\pi\left(\frac{11}{2}\right)(15)$

$S = \cancel{2}\pi\left(\frac{121}{\cancel{2} \cdot 2}\right) + 165\pi$

$S = \frac{121}{2}\pi + \frac{330}{2}\pi$

$S = \frac{451}{2}\pi$

77) $V_{sphere} = 2304\pi \text{ in}^3$

$S = ?$

$\frac{4}{3}\pi r^3 = 2304\pi$

$r^3 = 2304\left(\frac{3}{4}\right)$

$r^3 = 1728$

$\sqrt[3]{r^3} = \sqrt[3]{1728}$; $r = 12$

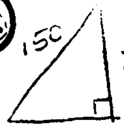
$\therefore S = 4\pi r^2$

$S = 4(\pi)(12)^2$

$S = 576\pi$

$A = 36\,cm^2$

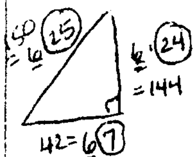
61



$P = ?$

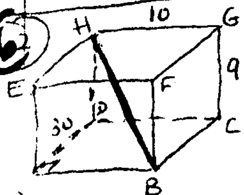
$P = 144 + 150 + 42$

$P = 144 + 150 + 42 = 336$

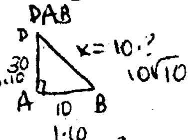


336

62



1st, find BD by using right △ DAB



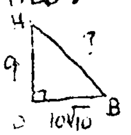
$3^2 + 1^2 = ?^2$

$9 + 1 = ?^2$

$10 = ?^2$

$? = \sqrt{10}$

Now you can find HB by using right △ HDB!



$9^2 + (10\sqrt{10})^2 = ?^2$

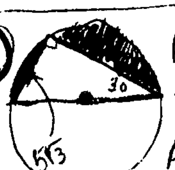
$81 + 1000 = ?^2$

$1081 = ?^2$

$? = \sqrt{1081}$

$\sqrt{1081}$

63

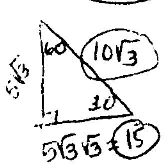


$A_{SR} = \text{hemi} - \triangle$

$A_{SR} = \frac{\pi r^2}{2} - \frac{1}{2}bh$

$A_{SR} = \frac{\pi(5\sqrt{3})^2}{2} - \frac{1}{2}(5\sqrt{3})(15)$

$A_{SR} = \pi\left(\frac{75}{2}\right) - \frac{75\sqrt{3}}{2}$



$\frac{75}{2}\pi - \frac{75\sqrt{3}}{2}$

70

$V = ?$

$V = \frac{1}{3}BH$

$V = \frac{1}{3}\pi r^2 H$

$V = \frac{1}{3}\pi(8^2)(15)$

$V = 64\pi(5)$

$V = 320\pi$

71 $S = ?$ (of #70)

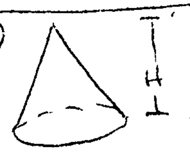
$\pi r^2 + \pi r \ell$

$\pi(8^2) + \pi(8)(17)$

$64\pi + 136\pi$

200π

72



$V = 600\pi\ m^3$

$B = 360\pi\ m^2$

$V = \frac{1}{3}BH$

$600\pi = \frac{1}{3}(360\pi)H$

$600\pi = 120\pi\ H$

$H = \frac{600}{120} =$

5m

73 $E = 10$ $F = ?$

$V = 6$

$F + V - E = 2$

$F = 2 - V + E$

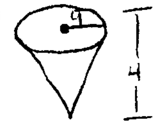
$F = 2 - 6 + 10$

$F = 6$

6

74

78

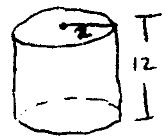


$V = \frac{1}{3}BH$

$V = \frac{1}{3}\pi r^2 H$

$V = \frac{1}{3}\pi\left(\frac{9^2}{2^2}\right)(4)$

$V_{cone} = 27\pi\ cm^2$



$V_{cyl} = BH$

$V_{cyl} = \pi r^2 H$

$V_{cone\ in\ cyl} = \pi r^2 H$

$27\pi = \pi(2)^2 H$

$27 = 4H$

$H = \frac{27}{4}$ or 6.75 cm

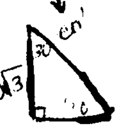
79 V of hexagonal prism w/ $s = 40$ cm and $H = 8$ cm.?

$V_{prism} = BH$

$V = \frac{1}{2}asn\,H$

$V = \frac{1}{2}(20\sqrt{3})(40)(6)(8)$

$V = 19{,}200\sqrt{3}$

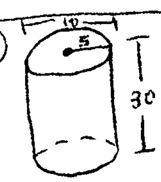


∴ $a = 20\sqrt{3}$

∴ $s =$

$19{,}200\sqrt{3}\ cm^3$

81



3 tennis balls

each ball looks like:

$r = 2$ cm

V of empty space = ?

$V_{can} = \pi r^2 H$

$V = \pi(5)^2(30)$

$V_{can} = 750\pi$

$V_{3\ balls} = 3\left(\frac{4}{3}\pi r^3\right)$

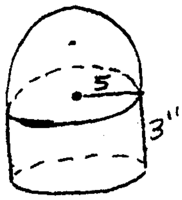
$= 4\pi r^3$

$= 4\pi(2)^3$

$V_{3\ balls} = 32\pi$

$V_{empty\ space} = 750\pi - 32\pi =$

718π

(82) 

$V = ?$

$V_{container} = V_{hemisphere} + V_{cylinder}$

$= \frac{2}{3}\pi r^3 + \pi r^2 H$

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

$= \frac{2}{3}\pi(125) + \pi(25)(3)$

$= \frac{250\pi}{3} + 75\pi$

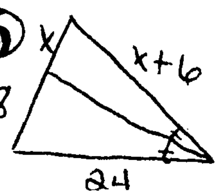
$= \frac{250}{3}\pi + \frac{225}{3}\pi$

$= \frac{475}{3}\pi$

$\frac{475}{3}\pi$ in^3

83) If 2 Δs are similar, then....

84) Parallel Line Proportionality Theorem

85) 

$\frac{x+6}{x} = \frac{24}{8}$

$\frac{x+6}{x} = \frac{3}{1}$

(88) Corr V: $\frac{729}{64} = \frac{m^3}{n^3}$

$\therefore \frac{m}{n} = \frac{\sqrt[3]{729}}{\sqrt[3]{64}} = \frac{9}{4}$

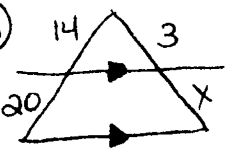
∴ corr sides/parts are in a ratio of $\frac{9}{4}$.

$\therefore \frac{D}{d} = \frac{9}{4} = \frac{D}{6}$

$4D = 54$

$D = \frac{54}{4} = \frac{27}{2}$

$D = \frac{27}{2}$

(89) 

If a line is ∥ to one side of a Δ, then it ÷s the other 2 sides proportionally.

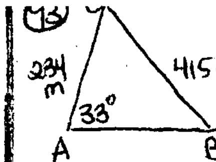
$\frac{14}{20} = \frac{3}{x}$

$\frac{7}{10} = \frac{3}{x}$

$7x = 30$

$x = \frac{30}{7}$

$\frac{30}{7}$

(93) 

m∠B = ? use the Law of Sines!

$\frac{\sin 33}{415} = \frac{\sin B}{234}$

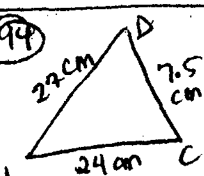
$\sin B(415) = \sin 33(234)$

$\sin B = \frac{\sin 33(234)}{415}$

* remember to use the $\boxed{INV}$ key since you're looking for an angle meas.

$\boxed{33}$ $\boxed{Sin}$ $\boxed{\times}$ $\boxed{234}$ $\boxed{=}$ $\boxed{\div}$ $\boxed{415}$ $\boxed{=}$ $\boxed{INV}$ $\boxed{Sin}$

$\approx 18°$

(94) 

m∠C = ? use the Law of Cosines!

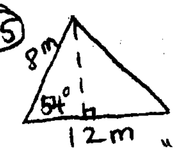
$27^2 = 24^2 + (7.5)^2 - 2(24)(7.5)\cos C°$

$\frac{27^2 - 24^2 - 7.5^2}{-2(24)(7.5)} = \cos C°$

* must use $\boxed{INV}$ key!!!

$\boxed{27}$ $\boxed{x^2}$ $\boxed{-}$ $\boxed{24}$ $\boxed{x^2}$ $\boxed{-}$ $\boxed{7.5}$ $\boxed{x^2}$ $\boxed{=}$ $\boxed{\div}$ $\boxed{2}$ $\boxed{+/-}$ $\boxed{\div}$ $\boxed{24}$ $\boxed{\div}$ $\boxed{7.5}$ $\boxed{=}$ $\boxed{INV}$ $\boxed{\cos}$

$\approx 106°$

(95) 

A = ?

$A = \frac{1}{2}bh$

To figure out ...

(85)

$\frac{x+6}{x}=\frac{3}{1}$

$3x=x+6$

$2x=6$

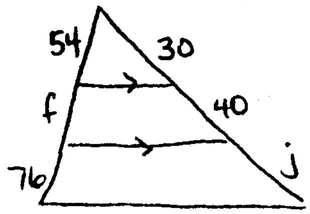
$x=3$

..n ∠ bisector ÷s
..he opp side into
segments proportional
..o the other
2 sides

3

---

(86) f=?



$\frac{54}{f}=\frac{30}{40}$

$\frac{54}{f}=\frac{3}{4}$

$3f=216$

$f=72$

72

---

(87) Same pic above
j=?

$\frac{54}{76}=\frac{30}{j}$

$\frac{27}{38}=\frac{30}{j}$; $27j=1140$

$j=\frac{1140}{27}$

$j=\frac{380}{9}$

$\frac{380}{9}$

---

(90) Corr
Areas: $\frac{25}{81}$

$\therefore \frac{m}{n}=\frac{\sqrt{25}}{\sqrt{81}}$

$\frac{m}{n}=\frac{5}{9}$

$\therefore$ Corr
Volumes: $\frac{5^3}{9^3}=\frac{125}{729}$

$\frac{125}{729}$

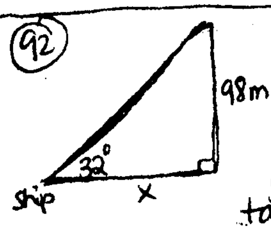
---

(91) $A=2{,}543\ cm^2$
If region is doubled, then
the new area would be
2×2 bigger, or 4× bigger.
$(2543)(4)=$

$10{,}172\ cm^2$

---

(92)

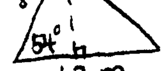


In relation to the
32°, you know the
opp. side & want
to know the
adjacent side ∴
you need to use the
tangent ratio.

$\tan 32° = \frac{98}{x}$

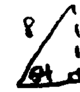
$x=\frac{98}{\tan 32°} \approx 157m$

157m



$A=\frac{1}{2}bh$

To figure out the
"h", you must use
Soh Cah Toa.



$\sin 54° = \frac{h}{8}$

$h=(\sin 54°)(8)$

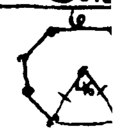
$A=\frac{1}{2}(12)(\sin 54°)(8)$

$A \approx 38.8$

$38.8\ m^2$

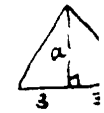
---

(96) $A_{octagon}=\frac{1}{2}asn$



$A=\frac{1}{2}(\tan 67.5)(3)(6)(8)$

$A \approx 174\ cm^2$



$\tan 67.$

$a=\tan$

from the 67.5° ∠, you
know the adj side (3)
and want to know
the opp side (a) ∴ you
must use the tangent
ratio!

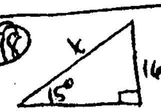
174 cm

---

(97) Soh Cah Toa ... you figure o

---

(98)



$\sin 15° = \frac{16}{x}$

$x=\frac{16}{\sin 15°}$

---

(99)

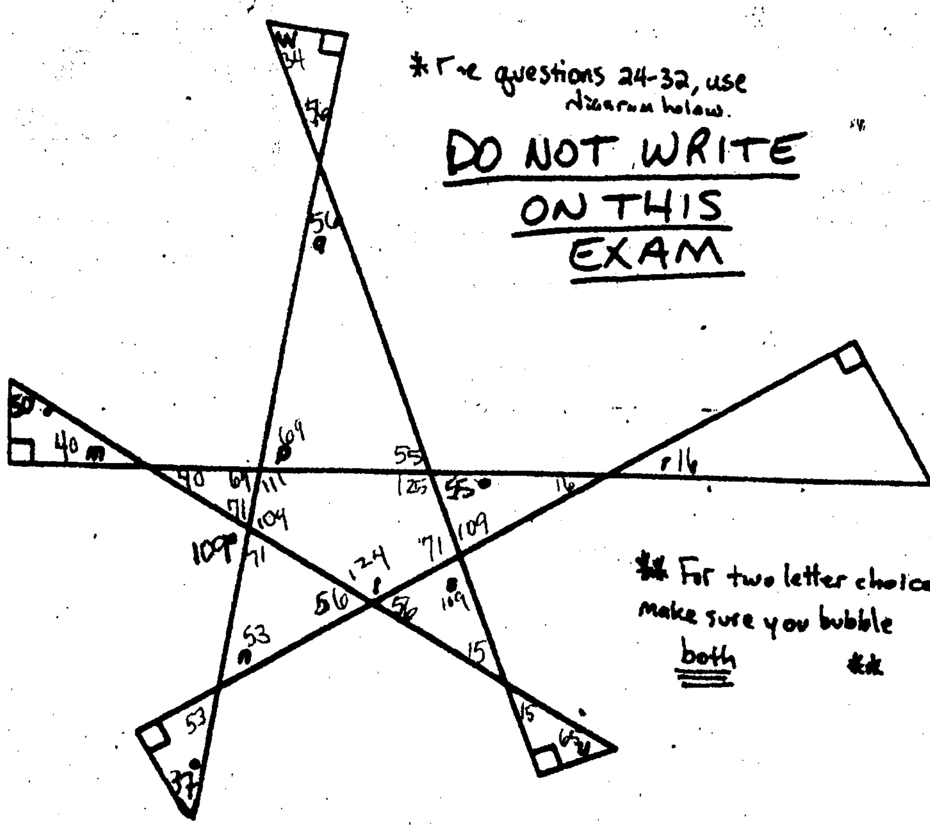
You're finished! Yeah!
Do it again you heard m

Ms. Chan's Geometry Hono
FINAL EXAM pg. 2 of

* For questions 24-32, use diagram below.

DO NOT WRITE ON THIS EXAM

** For two letter choices, make sure you bubble both **



24) ∠m
25) ∠n
26) ∠p
27) ∠q
28) ∠r
29) ∠s
30) ∠t
31) ∠u
32) ∠w

FINAL EXAM
Review for Chapter 1
8 of these will be on the exam

. Find the sum of 1 + 2 + 3 + ….. + 625.

:. Find the 80^{th} term of the sequence 12, 16, 20, 24….

. Find the sum of 28 + 29 + 30 + …. + 300.

. Find the 90^{th} term of the sequence 4, 15, 30, 49….

. Find the sum of 1 + 3 + 5 + ….. + 99.

. Find the sum of the first 400 odd numbers.

. Find the 100^{th} term of 0, 3/2, 4, 15/2, 12…..

. Find the sum of 33 + 35 + 37 + … + 511.

. Find the sum of the first 3000 even integers.

0. Find the sum of 2 + 4 + 6 + … + 200.

1. A classroom has 30 students. How many **different** two-person conversations are possible?

2. What is the total number of diagonals in a dodecagon?

3. Find the sum of 50 + 52 + 54 + … + 402.

4. Find the difference between the sum of the first 100 multiples of 6 and the sum of the first 100 even integers.

FINAL EXAM REVIEW | CHAPTER 1 8 PROBLE

1. Sum of 1+2+3+ - - - - - + 625. $\frac{n(n+1)}{2} = \boxed{195,625}$

~~2~~ 80^{th} term of the sequence ~~10~~ 12, 16, 20, 24, ... $4n+8$ $\boxed{328}$

3. Sum of 28+29+30+ - - - - + 300 $\frac{27(28)}{2} - \frac{300(301)}{2}$ $45150 - 378 = \boxed{44,7}$

4. 90^{th} term of the sequence
$\begin{matrix} 1 & 2 & 3 & 4 \\ 4, & 15, & 30, & 49, \\ 1\cdot 4 & 3\cdot 5 & 5\cdot 6 & 7\cdot 7 \end{matrix}$ - - - - - - $(2n-1)(n+3) = 179(93)$
$= \boxed{16,647}$

5. Sum of 1+3+5+ - - - - - - + 99 $\frac{99}{2} = 50$ $50^2 = \boxed{2500}$

6. Sum of the 1^{st} 400 odd numbers $400^2 = \boxed{160,000}$

7. 100^{th} term of $0, \frac{3}{2}, 4, \frac{15}{2}, 12,$ - - - - $\frac{(n-1)(n+1)}{2} = \frac{99(101)}{2} = \frac{9999}{2} = \boxed{4999}$
$\begin{matrix} 0 & 3 & 8 & 15 & 24 \\ & 1\cdot 3 & 2\cdot 4 & 3\cdot 5 & 4\cdot 6 \end{matrix}$

8. Sum of 33+35+37+ - - - - + 511 $256^2 - 16^2 = \boxed{65,280}$
$\frac{31}{2} = 16$ $\frac{511}{2} = 256$

9. Sum of the 1^{st} 3000 even numbers $3000(3001) = \boxed{9,003,000}$

10. Sum of 2+4+6+ - - - + 200 $100(101) = \boxed{10,100}$

11. A classroom has 30 students. How many different 2-person teams are possible? $\frac{n(n-1)}{2}$ $\frac{30(29)}{2} = \boxed{435}$

12. What are the total numbers of diagonals in a dodecagon?
$\frac{n(n-3)}{2} = \frac{12(9)}{2} = \boxed{54}$

13. Sum of 50+52+ - - - - - + 402
$\frac{48}{2} = 24$ $\frac{402}{2} = 201$ $201(202) - 24(25) = 40,602 - 600$
$= \boxed{40,002}$

14. Find the difference between the sum of the 1^{st} 100 multiples of 6 and the sum of the 1^{st} 100 even numbers.
$\boxed{20,200}$