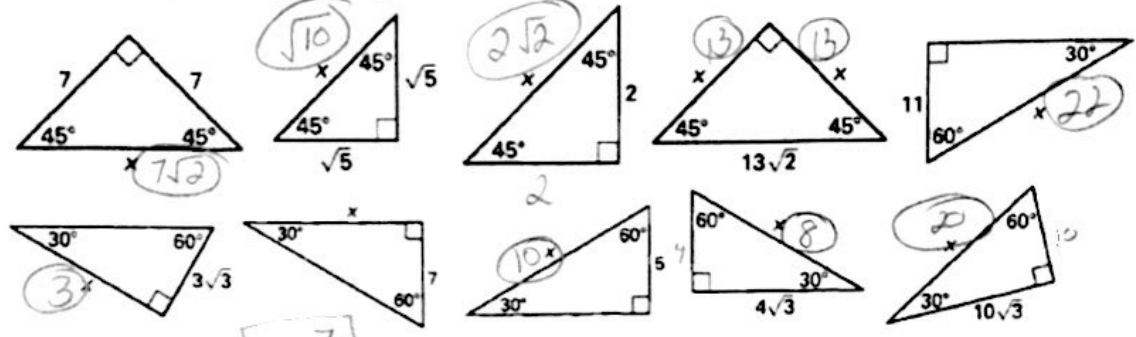


Ammar

Geo 9
Final Exam Review
#2

1. Solve the special right triangle for the missing sides.



S	M	L
x	x√3	2x

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



2. Draw the following vectors:

- a) 46° North of West b) 13° East of South c) 87° South of West

3. Find the magnitude of the following vectors:

- a) (-8, 2) b) (7, -3) c) (5, 7)

$\sqrt{68}$ $\sqrt{58}$ $\sqrt{74}$

a) $(-8)^2 + 2^2 = c^2$
 $64 + 4 = c^2$
 $68 = c^2$
 $\sqrt{68}$

b) $7^2 + (-3)^2 = c^2$
 $49 + 9 = c^2$
 $58 = c^2$
 $\sqrt{58} = c$

c) $5^2 + 7^2 = c^2$
 $25 + 49 = c^2$
 $74 = c^2$
 $\sqrt{74} = c$

4. Find the sum or difference of the vectors.

- a) $\langle -8, 5 \rangle + \langle 7, 7 \rangle$ b) $\langle 4, -15 \rangle - \langle -9, 7 \rangle$

$\langle -1, 12 \rangle$ $\langle 13, -22 \rangle$

5. List the five things we know about parallelograms (definition and four properties)

opp sides \parallel , opp sides \cong , consec \angle s \suppl , opp \angle s \cong , 2 sep \parallel sides 4 sided

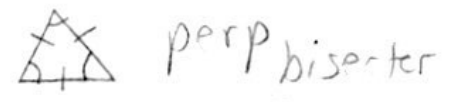
6. Convert the following:

- a) 110cm = 1.1 m b) 3 ft = 36 in c) 5000mm = 5 m d) 27 ft = 9 yds

page 682

7. Draw and label the sides and angles in an equilateral triangle.

a. What is special about the angle bisector in an equilateral triangle?



8. Draw and label a triangle with:

- a) an altitude b) a perpendicular bisector c) an angle bisector d) a median



9. Classify the triangle as acute, right, or obtuse:

- a) 10, 24, 26 b) 7, 8, 9 c) 2, 6, 10

Right

acute

obtuse

a) $26^2 = 10^2 + 24^2$ b) $9^2 < 7^2 + 8^2$ c) $10^2 > 2^2 + 6^2$
 $676 = 676$ $81 < 49 + 64$ $100 > 4 + 36$

10. Write the sin, cos and tan for B

$\sin B = \frac{10}{26} = \frac{5}{13}$
 $\cos B = \frac{24}{26} = \frac{12}{13}$
 $\tan B = \frac{10}{24} = \frac{5}{12}$

$\sin B = \frac{9}{15} = \frac{3}{5}$
 $\cos B = \frac{12}{15} = \frac{4}{5}$
 $\tan B = \frac{9}{12} = \frac{3}{4}$

$\sin B = \frac{30}{34} = \frac{15}{17}$
 $\cos B = \frac{16}{34} = \frac{8}{17}$
 $\tan B = \frac{30}{16} = \frac{15}{8}$

11. Solve for the area and perimeter of the rectangle with the given dimensions:

- a) 65m by 14 m $A = 65(14) = 910m^2$ $P = 130 + 28 = 158m$
 b) 12 ft by 4 ft $A = 12(4) = 48ft^2$
 c) 23 ft by 66 ft $A = 23(66) = 1518ft^2$ $P = 46 + 132 = 178ft$

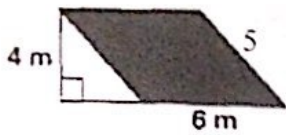
$$158m(2.18) = \boxed{\$344.44}$$

12. Use the answers from 11a to solve for:

- a) how much would it cost to dig a ditch around the outside if it costs \$2.18/m to dig? *Peri*
 b) how much area is left if you cover the large rectangle with a tarp that is 5m by 11m?

$$65 \times 14 = 910m^2 \quad 5 \times 11 = 55 \quad 910 - 55 = \boxed{855m^2}$$

13. Solve for the area of the parallelogram:



$$A = bh \\ = (6)(4) \\ = \boxed{24m^2}$$

14. Answer the following with sometimes, always or never:

- a. A square is a rectangle *Always*
 b. A rectangle is a square *Sometimes*
 c. A parallelogram is a quadrilateral *Always*
 d. A rhombus is a square *Never*
 e. A square is a rhombus *Always*
 f. A quadrilateral is a parallelogram *Sometimes*

15. Solve for the area and circumference of the given circles: $A = \pi r^2$ $C = \pi d$ or $2\pi r$

$$A = 36\pi \quad C = 12\pi$$

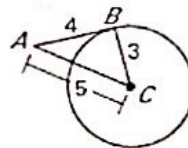
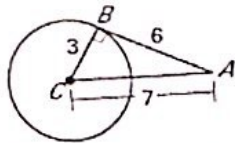
a. Radius 6 in

$$A = 81\pi \quad C = 18\pi$$

b. Diameter 18 ft.

16. Is the line tangent? Show proof.

$$6^2 + 3^2 \stackrel{?}{=} 7^2 \\ 36 + 9 \neq 49 \text{ NO}$$



$$3^2 + 4^2 = 5^2 \\ \text{yes}$$

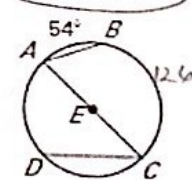
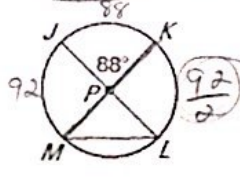
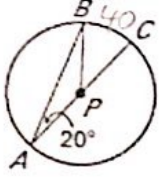
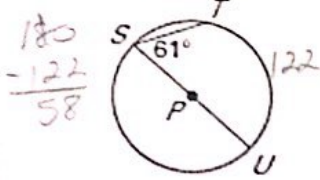
17. Find the measure of the indicated inscribed angle or the intercepted arc.

$$m\widehat{ST} = 58$$

$$m\widehat{AB} = 140$$

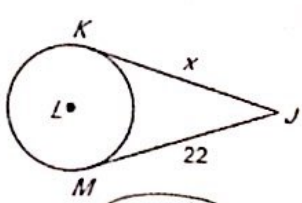
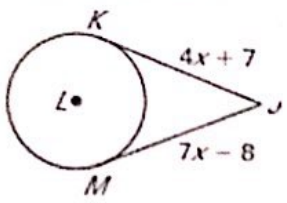
$$m\angle JLM = 46$$

$$m\angle A = 63$$



$$\frac{180}{-54} \\ 126/2 = 63$$

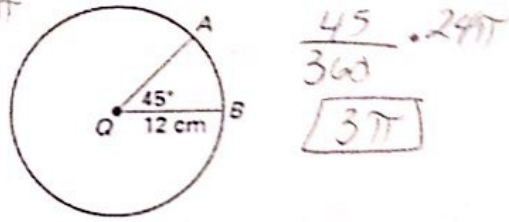
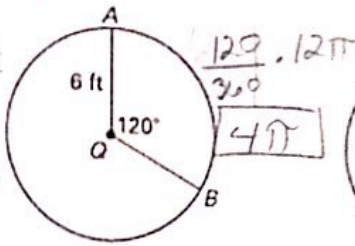
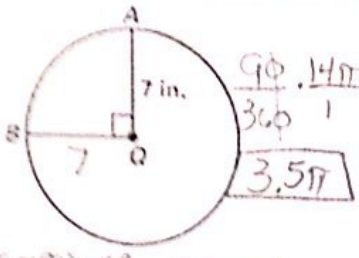
18. Solve for x.



$$4x + 7 = 7x - 8 \\ 7 = 3x - 8 \\ 15 = 3x \\ \boxed{5 = x}$$

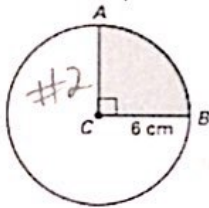
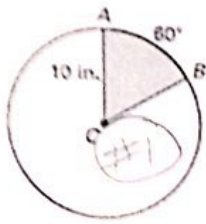
$$\boxed{x = 22}$$

19. Find the length of arc AB p. 281



arc measure \times Circumf
360

20. Find the area of the shaded sector. p. 287

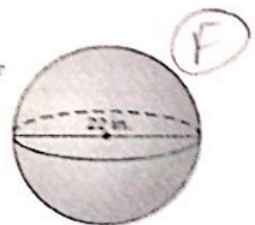
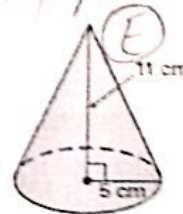
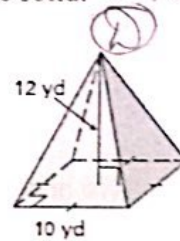
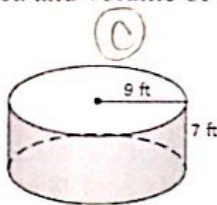
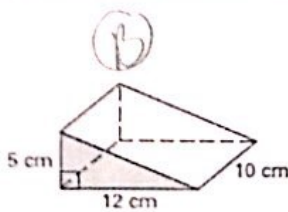
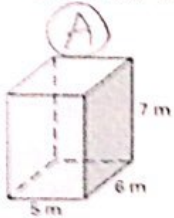


Area of sector formula: $\frac{\theta}{360} \cdot \pi r^2$

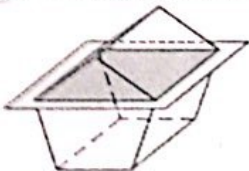
#1: $\frac{60}{360} \cdot 100\pi = 16.67\pi$

#2: $\frac{90}{360} \cdot 36\pi = 9\pi$

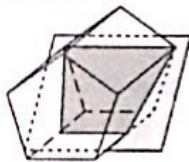
21. Find the lateral area, surface area and volume of the solid. other paper



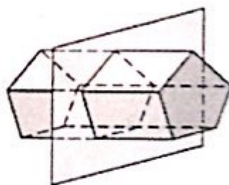
22. Describe the cross-section



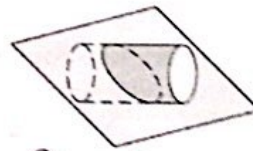
Quad



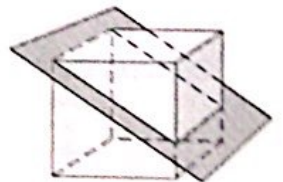
Trapezoid



Pentagon

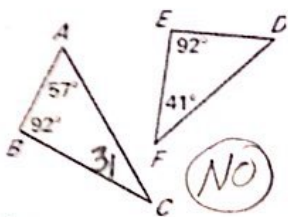


Circle (ellipse)

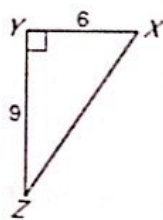
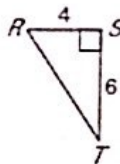


Rectangle

23. Are the triangles similar? If so, how?



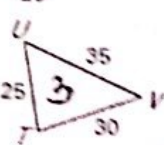
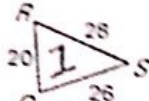
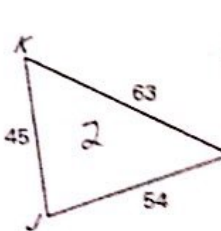
$\frac{92}{149} = \frac{180}{149}$
 $\frac{57}{149} = \frac{31}{149}$



$\frac{4}{6} = \frac{2}{3}$

$\frac{6}{9} = \frac{2}{3}$

yes. SAS~



$\frac{28}{63} = \frac{4}{9}$

$\frac{26}{54} = \frac{13}{27}$

NO

$\frac{28}{35} = \frac{4}{5}$

$\frac{26}{30} = \frac{13}{15}$

NO

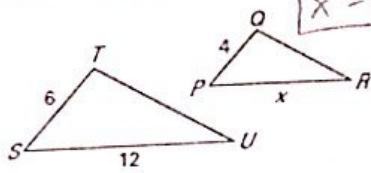
$\frac{20}{25} = \frac{4}{5}$

$\frac{26}{30} = \frac{13}{15}$

NO

2/3
3/5
4/5
4/5

24. Solve for x.
 $\triangle STU \sim \triangle PQR$

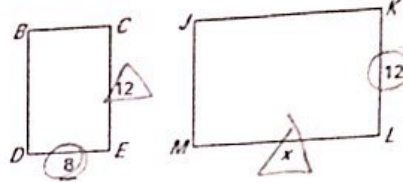


$$\frac{6}{4} = \frac{12}{x}$$

$$6x = 48$$

$$x = 8$$

$BCDE \sim KLMJ$

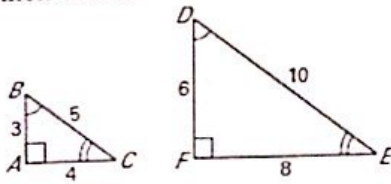


$$\frac{8}{12} = \frac{12}{x}$$

$$8x = 144$$

$$x = 18$$

25. Find the scale factor of the first triangle to the second. Find the ratio of their perimeters and the ratio of their areas.

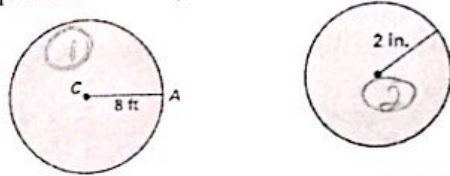


$$\frac{3}{6} = \frac{1}{2} = SF$$

$$\frac{1}{2} = \text{Peri}$$

$$\frac{1}{2^2} = \frac{1}{4} = \text{Area}$$

26. Find the area and circumference of the circle. Give your answer in two forms—in terms of pi (the most precise answer) and rounded to two decimal places.



$$A = \pi r^2$$

$$A = 4\pi \quad 12.56$$

$$C = \pi d \quad 4\pi \quad 12.56$$

$$A = 64\pi = 200.96$$

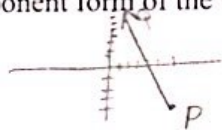
$$C = 16\pi = 50.24$$

27. Complete the following conversions:

6 ft = 2 yds? 5460 sec = 91 min 216 hrs = 9 days 198 in = 16.5 ft

28. Give the component form of the vectors. The initial point is P and the terminal point is Q.

P(6, -4) Q(1, 8)



P(-4, 1) Q(-5, -5)

29. Perform the following operations for the given vectors: $\vec{O} = \langle 9, -11 \rangle$ and $\vec{E} = \langle -3, 7 \rangle$

O-E: $9 - 3 = 6$, $-11 - 7 = -18$ → $\langle 6, -18 \rangle$
 E-O: $-3 - 9 = -12$, $7 - (-11) = 18$ → $\langle -12, 18 \rangle$
 E+O: $-3 + 9 = 6$, $7 + (-11) = -4$ → $\langle 6, -4 \rangle$

30. Use the Law of Sines to find the measure of angle A.

$A \approx 21.29^\circ$
 $a=16 \quad b=24 \quad B=33$
 $\frac{\sin 33}{24} = \frac{\sin A}{16}$
 $\frac{8.71}{24} = \frac{\sin A}{16}$
 $C=75 \quad B=63 \quad a=11$
 $\frac{63}{138} = \frac{11}{\sin A}$
 $\frac{138}{42} = \frac{11}{\sin A}$

31. Solve for the area of the given figure.

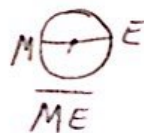
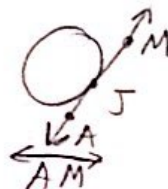
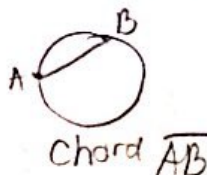
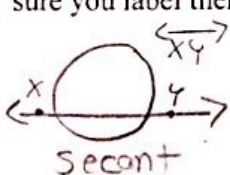
(A) A six sided figure with a radius of 5 and apothem of 4.

$$A = \frac{1}{2} a p$$

(B) A twelve sided figure with a side length of 10 and a radius of 12.

other paper

32. Draw a secant, a chord, a tangent, a diameter and a radius. Put each figure in a different circle. Make sure you label them.



Final Exam Review #2

(2) (A) $LA = Ph$ $P = 10 + 12 = 22$
 $= 22(7)$

$LA = 154m$

$SA = LA + 2B$ $B = 5(6) = 30$
 $= 154 + 2(30)$

$SA = 214m^2$

$V = Bh$ $B = 30$
 $= 30(7)$

$V = 210m^3$

(B) $LA = Ph$ $P = 13 + 12 + 5 = 30$ $5^2 + 12^2 = c^2$
 $= 30(10)$ $169 = c^2$ $c = 13$

$LA = 300cm$

$SA = LA + 2B$ $B = \frac{1}{2}(12)(5) = 6(5) = 30$
 $= 300 + 2(30)$

$SA = 360cm^2$

$V = Bh$
 $= 30(10)$

$V = 300cm^3$

(C) $LA = 2\pi rh$ $V = Bh$
 $= 2\pi(9)(7)$ $= 81\pi(7) = 567\pi ft^3$

$LA = 126\pi ft$

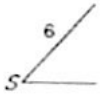
(B) $SA = LA + 2B$ $B = \pi(9)^2 = 81\pi$
 $= 126\pi + 2(81\pi) = 288\pi ft^2$

$A = 65(14) = 910m^2$ $P = 13 + 28 = 41$ $A = 12(4) = 48ft^2$ $P = 24 + 8 = 32ft$ $A = 25(66) = 1650ft^2$ $P = 46 + 12 = 58$ $A = 178ft$

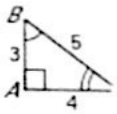
L
2x

c
c^2
c^2
c
ed
ecter
2
2^2 + 6^2
- 4 + 36
= 40
= 4/5
= 4/5
3
7

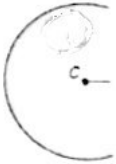
24. Solve
 $\triangle STU \sim$



25. Find their area:



26. Find precise area



27. Compute

6 ft = 2

28. Give the

P(6, -4) Q

29. Perimeter

O-E

30. Use the

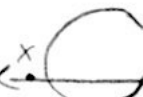
$A = 21$
 $a = 16$ $b = 2$

31. Solve for

A six-sided

A twelve-sided

32. Draw and label
 sure you label



(D) $LA = \frac{1}{2}Pl$
 $= \frac{1}{2}(40)(13)$
 $= 20(13)$

$LA = 260 \text{ yd}$

$SA = LA + B$
 $= 260 + 100$

$SA = 360 \text{ yd}^2$

$V = \frac{1}{3}Bh$
 $= \frac{1}{3}(100)(2)$

$V = 400 \text{ yd}^3$

slant + height
 $5^2 + 12^2 = c^2$
 $169 = c^2$

$13 = c$

$P = 10(4) = 40$

$B = 10(10) = 100$

(E) $LA = \frac{1}{2}2\pi r l$
 $= \frac{1}{2}2\pi(5)(2.1)$
 $A = 160.5\pi \text{ cm}$

$SA = LA + B$
 $= 160.5\pi + 25\pi$

$SA = 85.5\pi \text{ cm}^2$

$V = \frac{1}{3}Bh$
 $= \frac{1}{3}(25\pi)(11)$

$V = 91.67\pi \text{ cm}^3$

$5^2 + 11^2 = l^2$
 $25 + 121 = l^2$
 $12.1 = l$

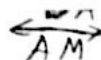
$B = 25\pi$

(F) $SA = 4\pi r^2$
 $= 4\pi(11)^2$
 $SA = 484\pi \text{ in}^2$

$V = \frac{4}{3}\pi r^3$
 $= \frac{4}{3}\pi(11)^3$

$V = 1774.67\pi \text{ in}^3$

Chord AB



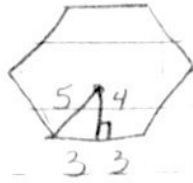
ME

JK

$$\textcircled{A} A = \frac{1}{2}ap$$

$$= \frac{1}{2}(4)(36)$$

$$\boxed{A = 72}$$



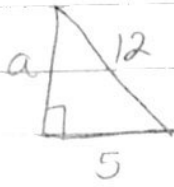
side length = 3

$$\text{Peri} = 6(3) = 36$$

$$\textcircled{B} A = \frac{1}{2}ap$$

$$= \frac{1}{2}(10.9)(50)$$

$$\boxed{A = 272.5}$$



side length $10/2 = 5$

$$5^2 + a^2 = 12^2$$

$$25 + a^2 = 144$$

$$a^2 = 119$$

$$\sqrt{a^2} = \sqrt{119}$$

$$a = 10.9$$

$$(10)5 = 50$$

$$\frac{L}{b} \mid 2x$$

$$7^2 = c^2$$

$$a = c^2$$

$$= c^2$$

$$= c$$

ded

isector



$$\textcircled{C}$$

$$2^2 + 6^2$$

$$\geq 4 + 36$$

$$= \frac{9}{15} = \frac{3}{5}$$

$$\frac{12}{5} = \frac{4}{5}$$

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

sin

$$A = 65(14) \quad P = 130 + 28 \quad A = 12(4) \quad P = 24 + 8 \quad A = 23(66) \quad P = 138 + 132$$

$$= 910m^2 \quad = 158m \quad = 48ft^2 \quad = 32ft \quad = 1518ft^2 \quad = 178ft$$