

GEOMETRY
2nd Semester Final Review

Name _____

Chapter 7

1. If 2 **polygons** are **SIMILAR**, what 2 characteristics must be true?

a. _____

b. _____

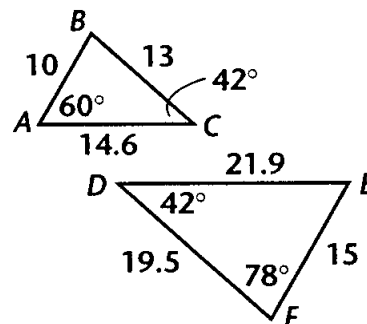
For each item, state:

(1) **whether** or not the polygons are SIMILAR, and

(2) if they ARE similar, **state WHY** by identifying the applicable definition, theorem, or postulate (**you may use abbreviations**)

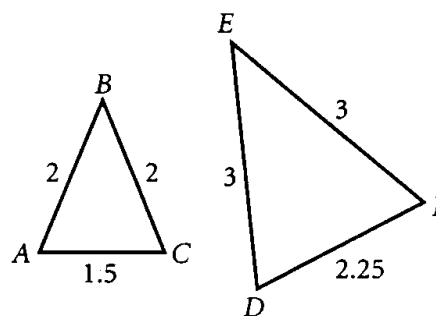
2. Similar? (Yes or No) _____

If YES, by which definition, theorem, or postulate? _____



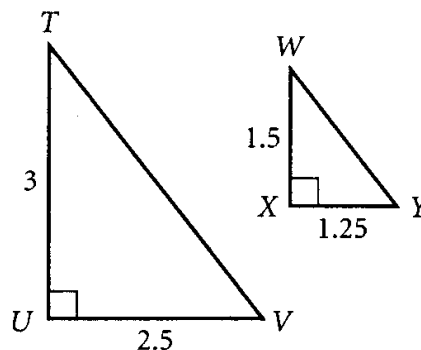
3. Similar? (Yes or No) _____

If YES, by which definition, theorem, or postulate? _____



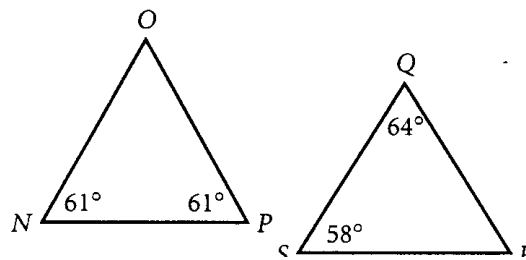
4. Similar? (Yes or No) _____

If YES, by which definition, theorem, or postulate? _____



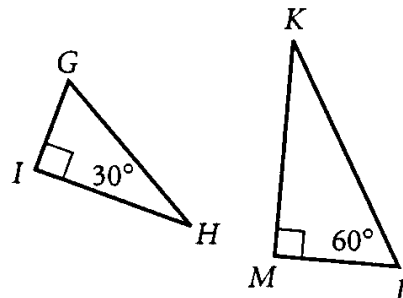
5. Similar? (Yes or No) _____

If YES, by which definition, theorem, or postulate? _____



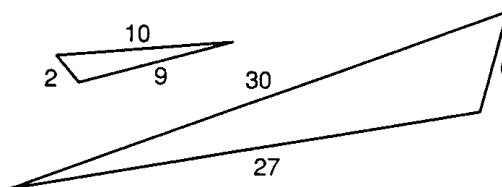
6. Similar? (Yes or No) _____

If YES, by which definition, theorem, or postulate? _____



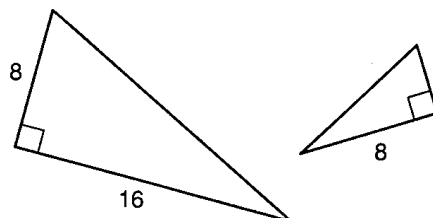
7. Similar? (Yes or No) _____

If YES, by which definition, theorem, or postulate? _____



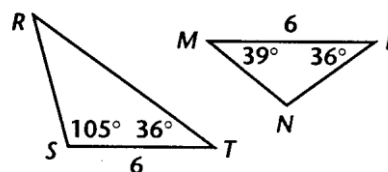
8. Similar? (Yes or No) _____

If YES, by which definition, theorem, or postulate? _____



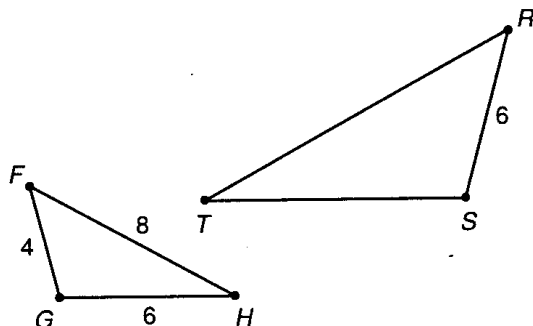
9. Similar? (Yes or No) _____

If YES, by which definition, theorem, or postulate? _____



9a.

In the figure below, $\triangle FGH \sim \triangle RST$. Find RT and ST .

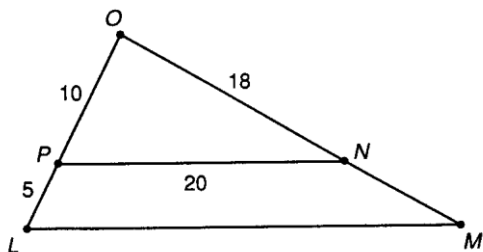


$RT =$ _____ $ST =$ _____

10.

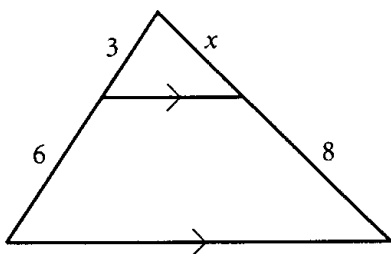
In the figure below, $\triangle OPN \sim \triangle OLM$.
Find LM and NM .

$LM =$ _____ $NM =$ _____



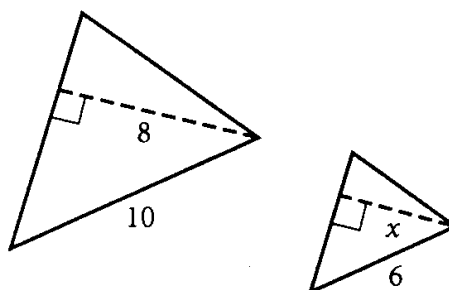
Assume the triangles shown are similar. Find the value of x in the following:

11.



$x =$ _____

12.

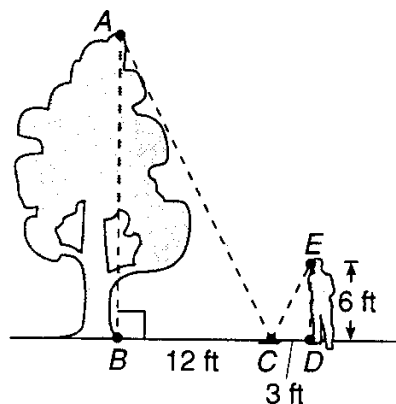


$x =$ _____

13. In the picture to the right,
the person sees the top of
the tree in a mirror placed
3 feet away from the person
and 12 feet away from the
tree.

If the person's eyes are 6 feet
above the ground, how Tall is
the tree.

Show your calculations.



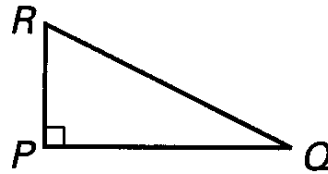
Chapter 8

14. Find all missing values to the **nearest tenth**, unless instructions state otherwise. Leave irrational answers in root form, rather than decimal.

a. $RQ = 17$

$PQ = 8$

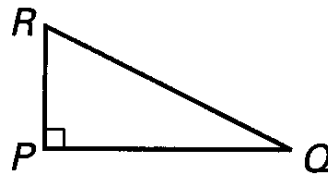
$PR = \underline{\hspace{2cm}}$



b. $PQ = 4$

$PR = 8$

$RQ = \underline{\hspace{2cm}}$

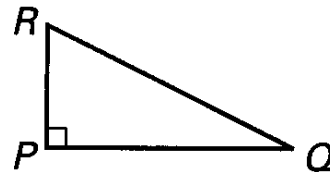


c. $m\angle Q = 45$

$RQ = 8$

$PQ = \underline{\hspace{2cm}}$

$PR = \underline{\hspace{2cm}}$

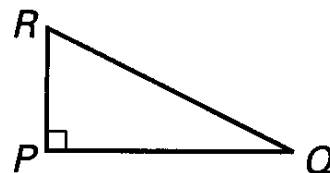


d. $m\angle R = 60$

$PR = 6$

$PQ = \underline{\hspace{2cm}}$

$RQ = \underline{\hspace{2cm}}$

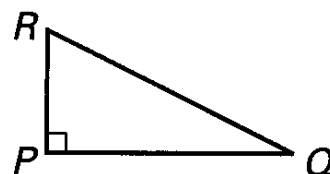


e. $m\angle Q = 60$

$PQ = 6$

$RQ = \underline{\hspace{2cm}}$

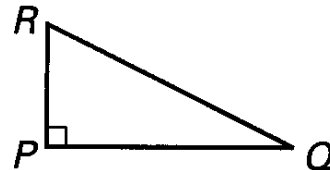
$PR = \underline{\hspace{2cm}}$



f. $m\angle R = 45$

$RQ = 6$

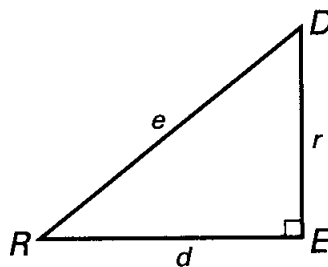
$PR = \underline{\hspace{2cm}}$



15. Prove the Pythagorean Theorem

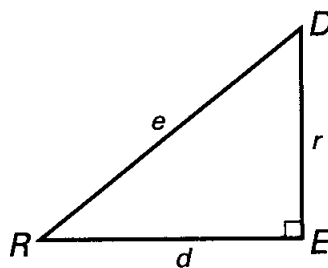
16. $e = 14$
 $m\angle R = 50$

$r =$ _____



17. $r = 8$
 $e = 10$

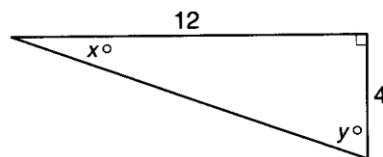
$m\angle D =$ _____



18. Find the measure of the angles

$x =$ _____

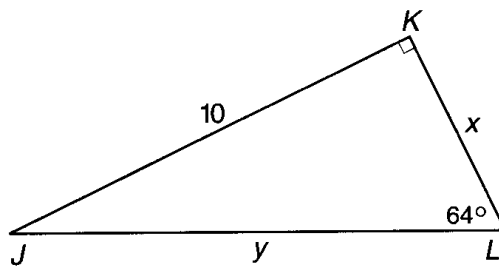
$y =$ _____



19. Find the measure of the sides:

$x =$ _____

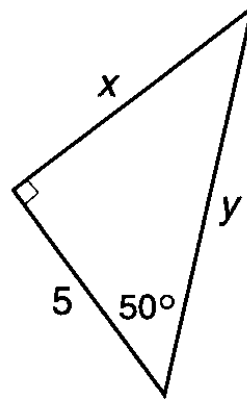
$y =$ _____



20. Find the measure of the sides:

$x =$ _____

$y =$ _____



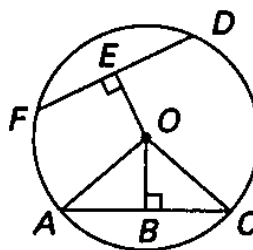
For each of the following word problems, make a Drawing, then show ALL equations and calculations.

21. At a point on the ground 50 feet from the foot of a tree, the angle of elevation to the top of the tree is 53° . Find the height of the tree.
22. From the top of a lighthouse 210 feet high, the angle of depression to a boat is 27° . Find the distance from the boat to the foot of the lighthouse. The lighthouse was built at sea level.
23. A plane took off from the runway. When the plane had flown 2000 m, it had covered a horizontal distance of 1800 m. Find the measure of the angle to the nearest degree at which the plane rose from the ground.

Chapter 10

24. $AO = 4$ and $OB = 2$

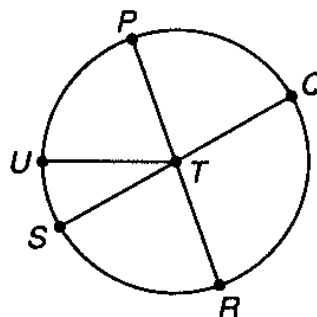
FIND: AC



25. T is the CENTER of the Circle to the Right.
 $m\angle QTP = 80$, $m\angle PTU = 70$ & $m\angle UTS = 30$
 and PR and QS are Diameters.

a. Find $m\widehat{PQ}$ _____

b. Find $m\angle RTQ$ _____

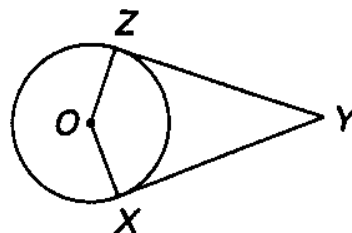


26. YZ and YX are Tangent Segments.
 OZ and OX are Radii.

$YZ = 6$ and $OZ = 4$

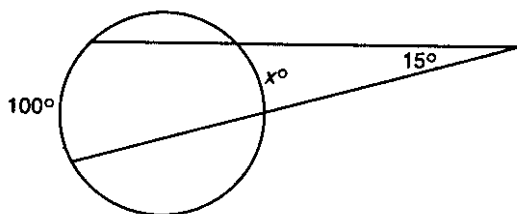
Find the DISTANCE from Y to the CENTER of the Circle:

Distance: _____



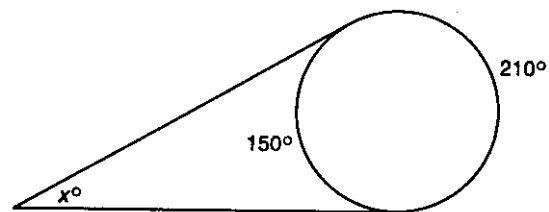
27. Find X in each of the following figures:

a.



$x =$ _____

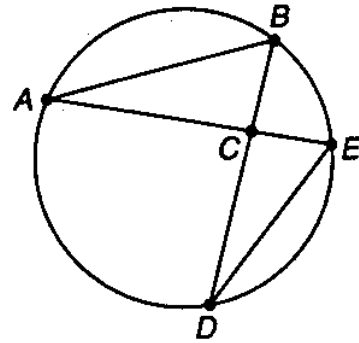
b.



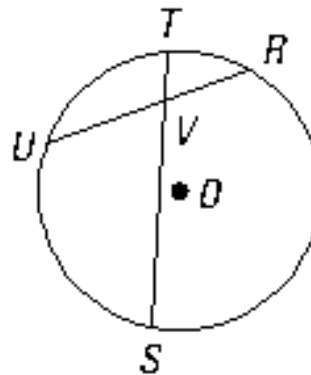
$x =$ _____

28. $m\widehat{AB} = 116$
 $m\widehat{BE} = 48$
 $m\widehat{ED} = 72$

- a. Find $m\angle BAE$ _____
b. Find $m\angle ABD$ _____
c. Find $m\angle ACB$ _____

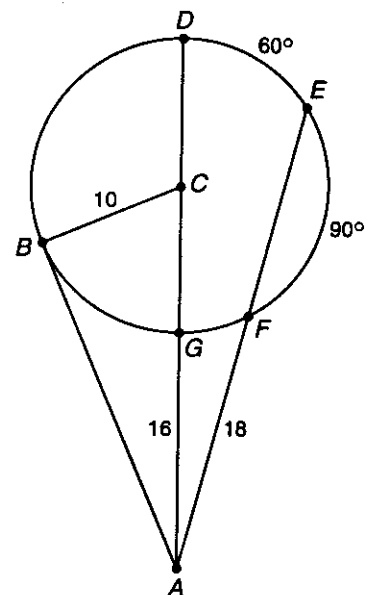


29. a. $UV = 6$, $VR = 4$, $VS = 12$
Find VT : _____
b. $TS = 27$, $UV = 9$, $VR = 8$
Find VS : _____



30. Refer to Circle C on the right. \overline{AB} is a Tangent.
 \overline{AD} and \overline{AE} are Secants. C is the Center.

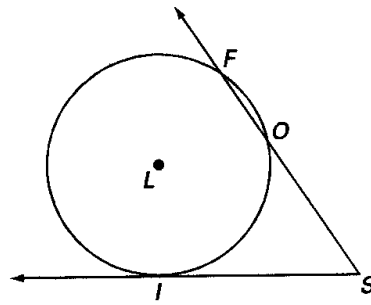
- a. Find AC _____
b. Find AB _____
c. Find $m\angle DAE$ _____
d. Find FE _____



31. **SI is TANGENT to Circle L.**

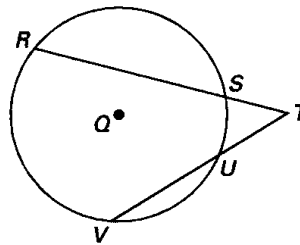
SI = 9
OS = 7.2

Find FO: _____



32. **ST = 16**
RS = 52
TU = 20

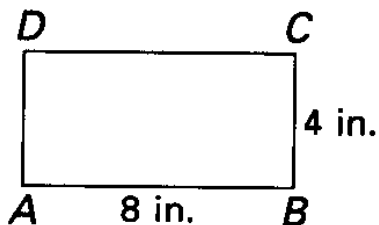
Find UV: _____



Chapter 11

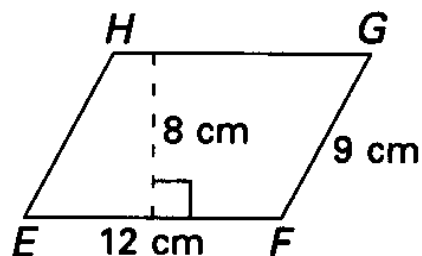
33. Find the **AREA** of the figures shown below.

a. rectangle $ABCD$



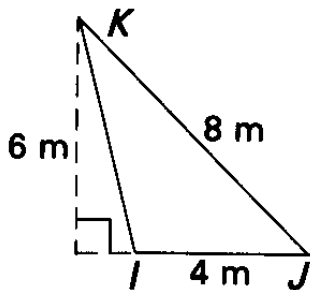
AREA = _____

b. parallelogram $EFGH$



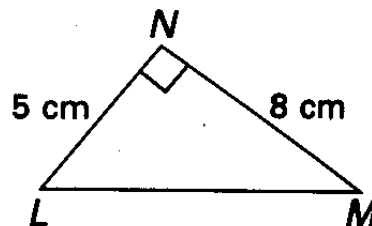
AREA = _____

c. triangle IJK



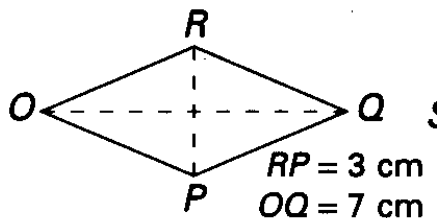
AREA = _____

d. triangle LMN



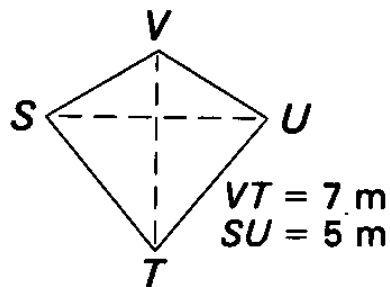
AREA = _____

e. rhombus $OPQR$



AREA = _____

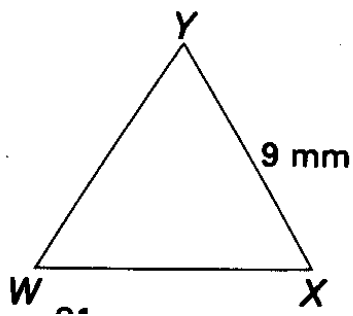
f. kite $STUV$



AREA = _____

g.

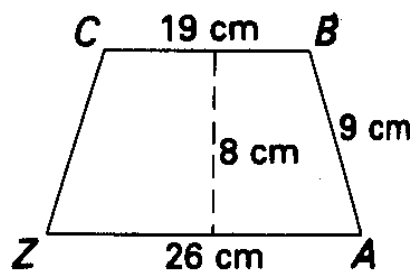
equilateral $\triangle WXY$



AREA = _____

h.

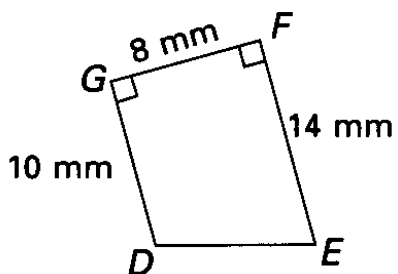
trapezoid ZABC



AREA = _____

i.

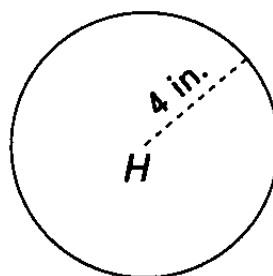
trapezoid DEFG



AREA = _____

j.

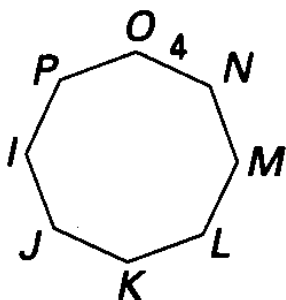
circle H



AREA = _____

k.

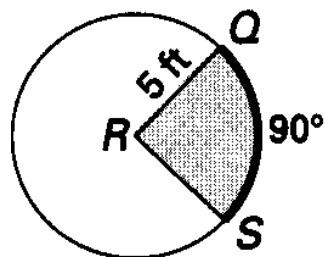
regular octagon
IJKLMNOP



AREA = _____

l.

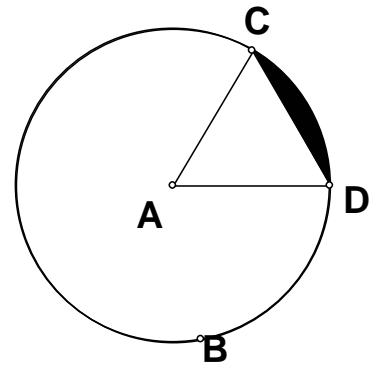
sector QRS



AREA = _____

34. Find the **AREA of a SEGMENT** of a circle with a 5-cm radius that is determined by an arc that measures 60.

AREA = _____



35. Find the **LENGTH of an ARC** that measures 45 in a circle with an 12 cm RADIUS.

LENGTH = _____

36. The perimeters of two rectangles are 25 mm and 75 mm. Find the **ratio of their AREAs**.

RATIO = _____

37. Find the **AREA** of a **TRIANGLE** with sides 7 cm, 8 cm, and 9 cm long.

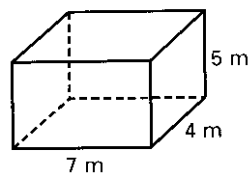
AREA = _____

Chapter 12-13

39. Find the AREAs and VOLUMES indicated for each solid:

a.

Rectangular solid



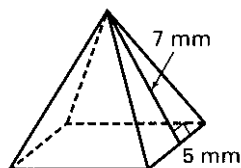
LATERAL AREA _____

SURFACE AREA _____

VOLUME _____

b.

Regular square pyramid



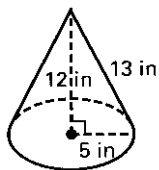
LATERAL AREA _____

SURFACE AREA _____

VOLUME _____

c.

Cone



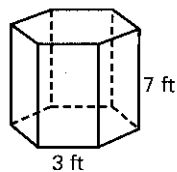
LATERAL AREA _____

SURFACE AREA _____

VOLUME _____

d.

Right rectangular hexagonal prism

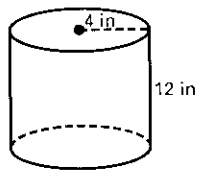


LATERAL AREA _____

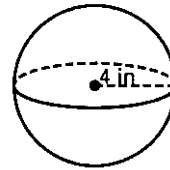
SURFACE AREA _____

VOLUME _____

e. Right cylinder



f. Sphere



LATERAL AREA _____

SURFACE AREA _____

VOLUME _____

SURFACE AREA _____

VOLUME _____

40. The volume of a cube is 64 cm^3 . Find its total area.

41. If the lengths of the altitude and a radius of a right cone are multiplied by 4, what is the ratio of the new volume to the original volume?

GEOMETRY

Answers to 2nd Semester Review:

- 1a. Corresponding sides are proportional
1b. Corresponding angles are congruent.

2. Yes, AA~ or SAS ~ or SSS~

4. Yes, SAS~

6. Yes, AA~

8. Yes, SAS ~

9a. RT = 12 ST = 9

3. Yes, SSS~

5. No

7. Yes, SSS~

9. Yes, AA ~

10. LM = 30 NM = 9

11. x = 4

13. Tree = 24 ft.

14b. RQ = $4\sqrt{5}$

14d. PQ = $6\sqrt{3}$ RQ = 12

14f. PR = $3\sqrt{2}$

12. x = 4.8

14a. PR = 15

14c. PQ = $4\sqrt{2}$ PR = $4\sqrt{2}$

14e. RQ = 12 PR = $6\sqrt{3}$

15. See Class Notes

16. 10.7

18. x = 18.4 y = 71.6

20. x = 6 y = 7.8

22. $412 \tan 63 = \frac{x}{210}$

17. 36.9

19. x = 4.9 y = 11.13

21. $66.4 \tan 53 = \frac{x}{50}$

23. $25.8^\circ \cos^{-1} \frac{1800}{2000}$

24. $4\sqrt{3}$

25a. 80

25b. 100

26. $2\sqrt{13}$

27a. 70

27b. 30

28a. 24

28b. 62

28c. 94

29a. 2

29b. 24

30a. 26

30b. 24

30c. 15

30d. 14

31. 4.05

32. 34.4

33a. 32 sq. in.

33b. 96 sq in.

33c. 12 sq in.

33d. 20 sq in.

33e. 10.5 sq cm

33f. 17.5 sq in.

33g. $\frac{81}{4}\sqrt{3}$ sq mm

33h. 180 sq cm

33i. 96 sq mm

33j. 16π sq in.

33k. 77.25 sq units 33l. $\frac{25\pi}{4}$ sq ft. 34. $\frac{25\pi}{6} - \frac{25\sqrt{3}}{4}$ 35. $\frac{45}{360} \cdot 24\pi = 3\pi$

36. 1 : 9

37. Heron's Formula $\sqrt{720}$ or $12\sqrt{5}$

39a 110 sq m
166 sq m
140 cu m

b. 70 sq mm
95 sq mm
54.483 cu mm

c. 65π sq in
 90π sq in
 100π cu in

d. 126 sq ft
172.77 sq ft
163.68 cu ft

39e. 96π sq in
 128π sq in
 192π cu in

f. 64π sq in
 85.3π cu in

40. 16 sq cm

41. 64 to 1