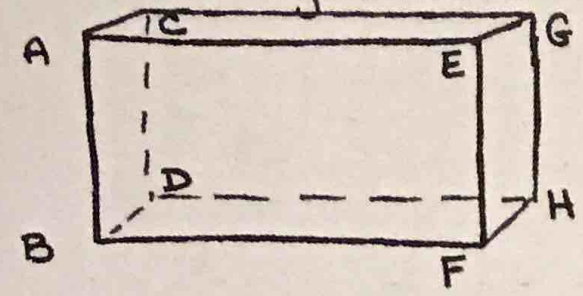
Name: KEY

Math 132 Final

① In the figure below name all segments skew to $\overline{AB}$.



$\overline{DH}$, $\overline{CG}$, $\overline{EG}$, $\overline{FH}$

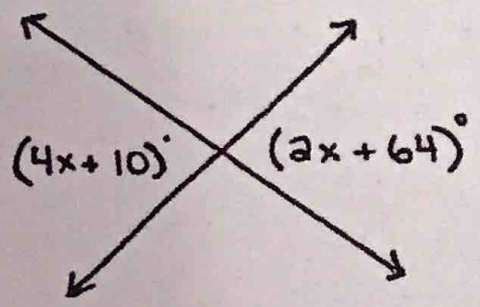
② What is the sum of the angles in a convex heptagon?

$$180(n-2) = 180(7-2)$$
$$= 180(5) = 900^\circ$$

③ What is the measure of one exterior angle in a convex regular octagon?

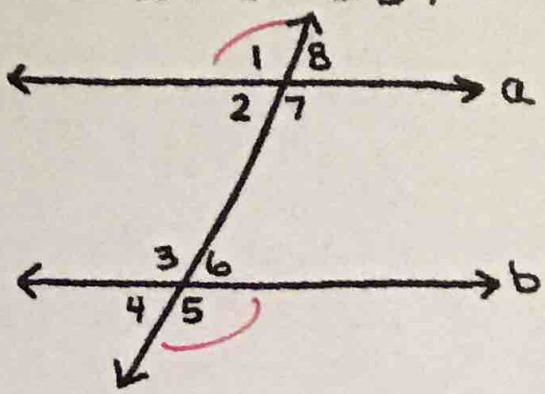
$$\frac{360}{8} = 45^\circ$$

④ Solve for x in the diagram shown below:



$$4x+10 = 2x+64$$
$$4x = 2x+54$$
$$2x = 54$$
$$x = 27$$

⑤ In the diagram shown what type of angles are ∡1 & ∡5?



a ∥ b

Alternate Exterior Angles

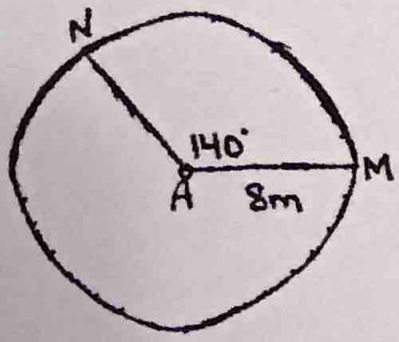
⑥ Using the diagram <u>above</u> m∡2 = 54° & m∡3 = 2x + 18. What is the value of "x"?

$$54^\circ + (2x + 18) = 180^\circ$$
$$2x + 18 = 126$$
$$2x = 108$$
$$x = 54$$

⑦ Convert 42° 18' 30" into decimal form.

$$42 + \frac{18}{60} + \frac{30}{3600} = 42.308\overline{3}^\circ$$

⑧



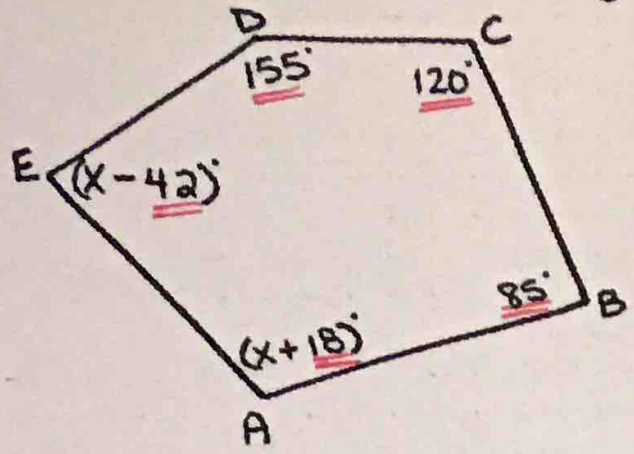
Given this is a circle with the center at A. Find the length of Arc MN.

$C = D\pi = 16\pi$

Arc length $= 16\pi\left(\frac{140}{360}\right)$

Arc length ≈ 19.55 m

⑨ Find m∡A in the figure below:



$180(n-2)$

$180(5-2) = 540°$

$2x + 336 = 540$

$2x = 204$

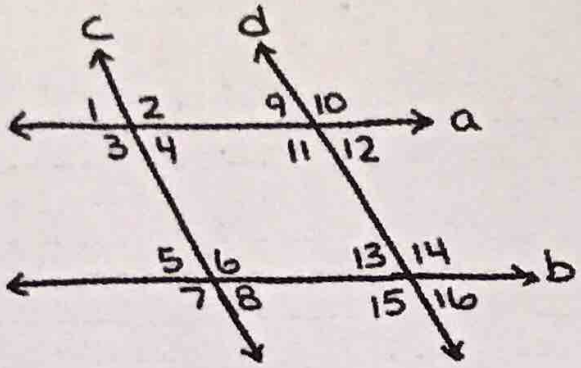
$x = 102$

$m\measuredangle A = (102 + 18)°$

$m\measuredangle A = 120°$

⑩ Given: a ∥ b
c ∥ d

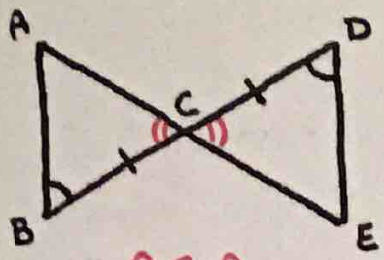
Prove: ∡2 ≅ ∡15



S	R
1. a ∥ b c ∥ d	1. Given
2. ∡2 ≅ ∡6	2. Corresponding ∡'s
3. ∡6 ≅ ∡15	3. Alt. Int ∡'s
4. ∡2 ≅ ∡15	4. Transative Prop.

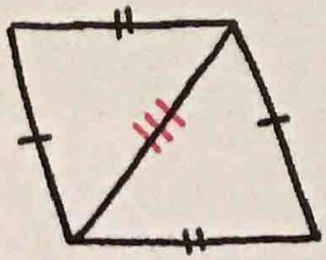
(11) State why each pair of triangles are congruent. If not congruent say "NOT CONGRUENT"

a)



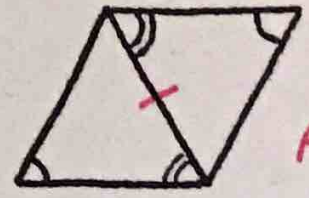
ASA

b)



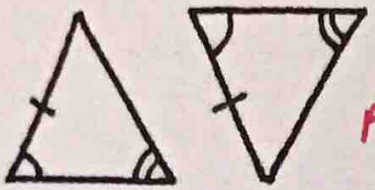
SSS

c)



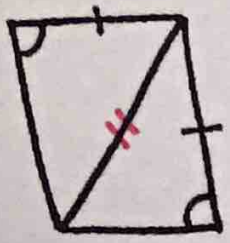
AAS

d)



AAS

e)

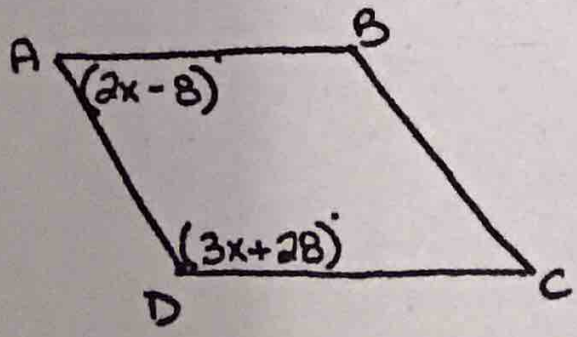


Not $\cong$

f)

Not $\cong$

(12) Given ABCD is a parallelogram find m∡A.



$5x + 20 = 180$

$5x = 160$

$x = 32$

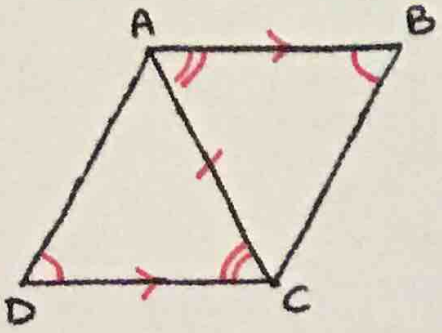
$m\measuredangle A = 2(32) - 8$

$= 64 - 8$

$m\measuredangle A = 56°$

(13) **Given:** $\overline{AB} \parallel \overline{CD}$
$\angle D \cong \angle B$

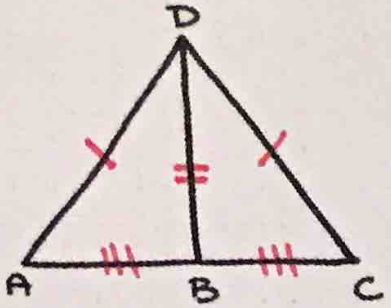
Prove: $\overline{AD} \cong \overline{CB}$



S	R
1. $\overline{AB} \parallel \overline{CD}$, $\angle D \cong \angle B$	1. Given
2. $\overline{AC} \cong \overline{AC}$	2. Reflexive Prop.
3. $\angle DCA \cong \angle BAC$	3. Alt. Int. $\angle$'s
4. $\triangle ADC \cong \triangle CBA$	4. AAS
5. $\overline{AD} \cong \overline{CB}$	5. CPCTC

(14) **Given:** B is the midpoint of $\overline{AC}$
$\overline{AD} \cong \overline{CD}$

Prove: $\angle ABD \cong \angle CBD$



S	R
1. B is the midpoint of $\overline{AC}$, $\overline{AD} \cong \overline{CD}$	1. Given
2. $\overline{DB} \cong \overline{DB}$	2. Reflexive Prop.
3. $\overline{AB} \cong \overline{BC}$	3. Def of Midpoint
4. $\triangle ADB \cong \triangle CDB$	4. SSS
5. $\angle ABD \cong \angle CBD$	5. CPCTC

(15) For each statement say TRUE or FALSE

a) All rectangles are squares F

b) The diagonals of a Kite are perpendicular T

c) All four sides of a rhombus are congruent T

d) Opposite sides of a Kite are congruent F

e) Trapezoids only have one pair of parallel sides T

f) Diagonals of a rectangle bisect each other T

g) Diagonals of a parallelogram bisect the angles F

h) Consecutive angles of a square are supplementary T

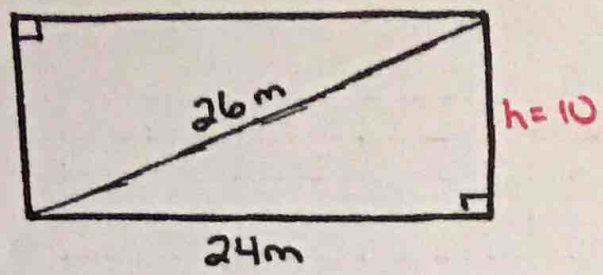
i) Diagonals of a rhombus are congruent F

j) All sides of an isosceles trapezoid are congruent F

k) Linear angles are supplementary T

l) Perpendicular lines do NOT intersect F

(16) What is the perimeter of the rectangle shown?



$24^2 + h^2 = 26^2$

$576 + h^2 = 676$

$h^2 = 100$

$h = 10$

$P = 24 + 24 + 10 + 10$

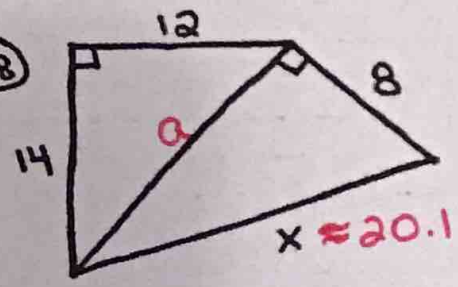
$P = 68m$

(17) What type of triangle do the sides 8m, 10m, 15m make? (Explain)

$8^2 + 10^2 < 15^2$

OBTUSE

(18)



Solve for x: (Round to one decimal)

$12^2 + 14^2 = a^2$

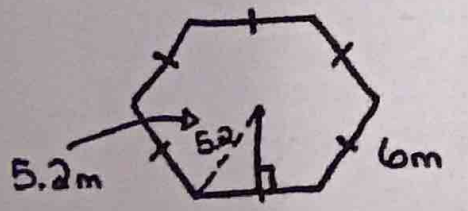
$340 = a^2$

$a^2 + 8^2 = x^2$

$340 + 64 = x^2$

$\sqrt{404} = \sqrt{x^2}$

(19) Find area of the figure below



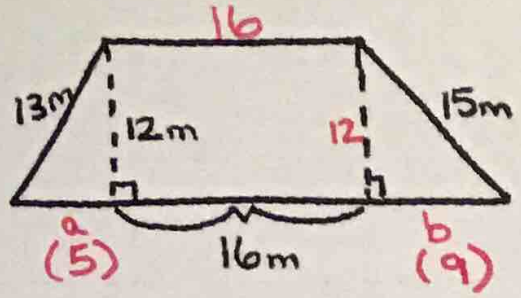
$A = \frac{1}{2}ap$

$P = 6(6)$

$\approx \frac{1}{2}(4.25)(36)$

$A \approx 76.5\ m^2$

(20) Find the area of the figure below:



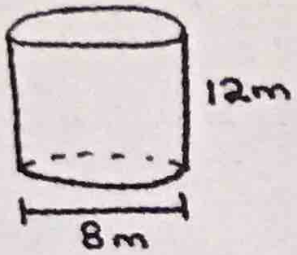
$A = \frac{1}{2}(16 + 30)(12)$

$A = 276\,m^2$

$a^2 + 12^2 = 13^2$
$a^2 + 144 = 169$
$a^2 = 25$
$a = 5$

$b^2 + 12^2 = 15^2$
$b^2 + 144 = 225$
$b^2 = 81$
$b = 9$

(21) Find Volume of:



$V = Bh$

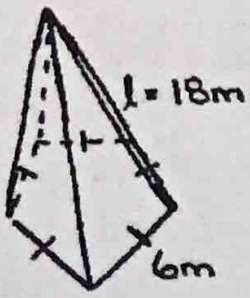
$V = (\pi r^2)(h)$

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

$V = 192\pi\ m^3$

(22) Find Surface Area of:

apothem = 4m
height = 14m



$P = 5(6) = 30$

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

$B = \frac{1}{2}(4)(30)$

$B = 60m^2$

$SA = L + B$

$= L + 60m^2$

$= 270 + 60$

$SA = 330m^2$

$L = \frac{1}{2}pl$

$= \frac{1}{2}(30)(18)$

$= 270m^2$

(23) What is the distance between A(2,-1,5) and B(-3,4,0)?

$$d = \sqrt{(2--3)^2+(-1-4)^2+(5-0)^2}$$

$$= \sqrt{(5)^2+(-5)^2+(5)^2}$$

$$= \sqrt{25+25+25} = \sqrt{75} \approx 8.66$$

(24) If you reflect point A(-3,8) over the y-axis and then translate the new point right 5 and down 4 what are the coordinates of the final point?

$$A'(3,8) \rightarrow A''(8,4)$$

$$(x+5,\ y-4)$$

(25) If you reflect point B(-1,-5) over the line y=x and then dilate the new point using a scale factor of 3 what are the coordinates of the final point?

$$B'(-5,-1) \rightarrow B''(-15,-3)$$