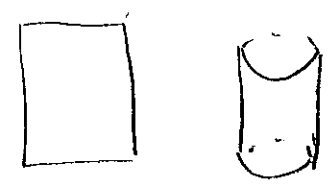
Geometry Review
June 2016

Name Key
Date:______________ Period: __________

PART I: YOU MUST SHOW ALL WORK FOR FULL CREDIT!!!

1.)



3

2.)

$3(6) = \boxed{18}$

4

3.)

$x^2 + 4x = -(y^2 - 20)$

$x^2 + 4x = -y^2 + 20$

$+y^2 - 20 \quad +y^2 \; -2$

$\boxed{\text{Step 2}}$

2

4.)

translation - shift
(no turn or flip)

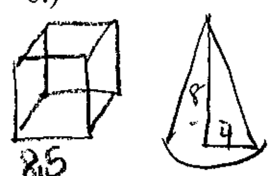
1

5.)

(1) SAS (3) ∠s not in between sides
(2) AA (4) SAS

3

6.)



8.5

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

$\boxed{(8.5)^3 - \frac{1}{3}\pi(4)^2 8}$

4

7.)

SAS

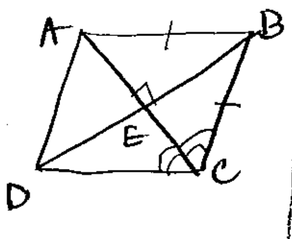
3

8.)

dilation, rotation
size increase turn 90°

4

9.)

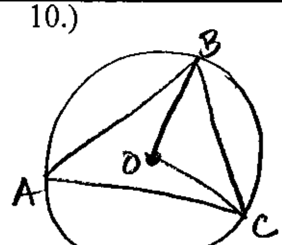


llgram

$\overline{AC} \cong \overline{DB}$ not true in a rhombus

1

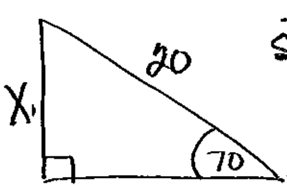
10.)



$\boxed{\angle BAC = \frac{1}{2}\angle BOC}$

2

11.)



$\frac{20}{\sin 90} = \frac{x}{\sin 70}$

$\frac{x \sin 90}{\sin 90} = \frac{20 \sin 70}{\sin 90}$

$\boxed{x = 18.79385242}$

4

12.)

$m = \frac{-7-5}{5--11} = \frac{-12}{16} = \boxed{\frac{-3}{4}}$

$mp = \left(\frac{-11+5}{2}, \frac{5+(-7)}{2}\right)$

$= \left(\frac{-6}{2}, \frac{-2}{2}\right) = \boxed{(-3,-1)}$

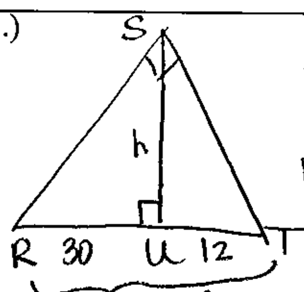
$\boxed{\perp m = \frac{4}{3}}$

$y = mx + b$

$\boxed{y + 1 = \frac{4}{3}(x+3)}$

1

13.)



$\frac{h}{30} = \frac{12}{h}$

$h^2 = 360$

$h = \sqrt{360}$

$\sqrt{36}\sqrt{10}$

$\boxed{6\sqrt{10}}$

2

14.)

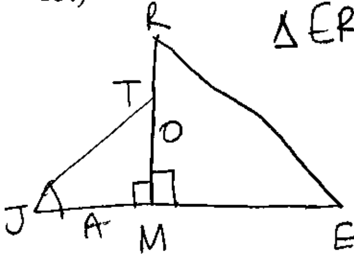
$mBC = \frac{3-1}{7-2} = \frac{2}{5}$

altitude ⊥ to $\overline{BC}$

$\boxed{\perp m = \frac{-5}{2}}$

4

15.)



$\triangle ERM \sim \triangle JMT$

$\angle J \cong \angle E$

$\angle T \cong \angle R$

$\angle M \cong \angle M$

$T\frac{O}{A}$

$\boxed{\tan E = \frac{TM}{JM}}$

4

16.)

$ABCD \rightarrow KLMN$

$A \rightarrow K$ $\quad C \rightarrow M$

$B \rightarrow L$ $\quad D \rightarrow N$

reflection over x-axis

3

17.)

$\frac{4}{x} = \frac{6}{15}$

$6x = 60$

$\boxed{x = 10}$

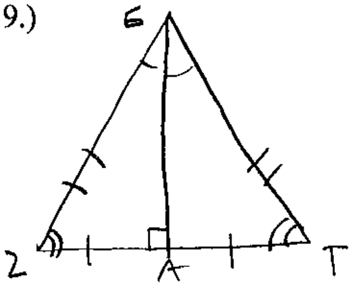
1

18.)

1.2oz per liter

2

19.)



2

20.)

$V = \frac{\frac{4}{3}\pi r^3}{2} = \frac{\frac{4}{3}\pi(5)^3}{2} = 261.7993878$

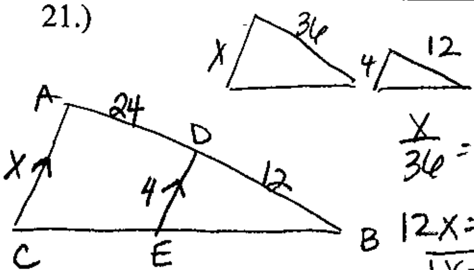
$d = \frac{m}{V}$ $\quad 62.4 = \frac{m}{261.7993878}$

$D = 62.4\ lbs/ft^3$

$\boxed{m = 16336.2818}$

1

21.)



$\frac{x}{36} = \frac{4}{12}$

$12x = 144$

$\boxed{x = 12}$

2

22.)

3

23.)

$mp\,AB = \left(\frac{3+3}{2}, \frac{3+(-7)}{2}\right)$

$= \left(\frac{6}{2}, \frac{-4}{2}\right) = (3,-2)$

1

24.)

$A = \frac{n}{360}\pi r^2 = \frac{60}{360}\pi(8)^2$

$\frac{3840 \div 120}{360 \div 120}\pi = \frac{32\pi}{3}$

3

25.)

Reflect over x-axis

Translation 6 units right

$C(3,6) \xrightarrow{r_{x\text{-}axis}} (3,-6) \xrightarrow{T_{(6,0)}} (3,-6)$

26.) $4{:}5 \rightarrow \frac{4}{9}$ $\quad (4,2)$ $\quad (22,2)$ **Part II**

$(x_1 + frac(x_2 - x_1) + y_1 + frac(y_2 - y_1))$

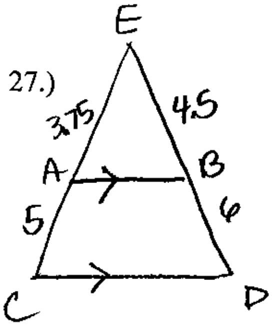
$\left(4 + \frac{4}{9}(22-4),\ 2 + \frac{4}{9}(2-2)\right)$

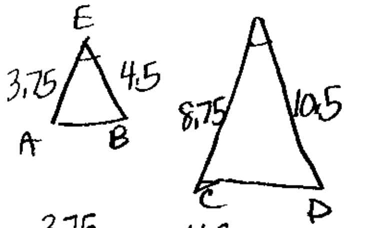
$\left(4 + \frac{4}{9}(18),\ 2 + \frac{4}{9}(0)\right)$

$(4+8,\ 2+0)$

$\boxed{(12,2)}$

27.)





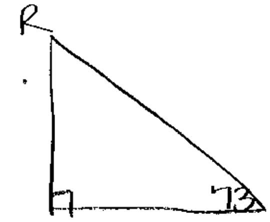
$$\frac{3.75}{8.75} = \frac{4.5}{10.5}$$

$$4.5(8.75) = (3.75)(10.5)$$

$$39.375 = 39.375$$

$\Delta EAB \sim \Delta ECD$
by SAS b/c corresponding sides are in proportion & the ∠ in between are ≅. In ~ Δs corresponding ∠s are ≅, so ∠EAB ≅ ∠ECD. If lines are ∥, corresponding ∠s are ≅, so $\overline{AB} \parallel \overline{CD}$.

28.)



sin 73 = cos R

$$90 - 73 = \boxed{17°}$$

A cofunction means the sin of 1 ∠ must equal the cos of the other non-right ∠, so they must add to 90°

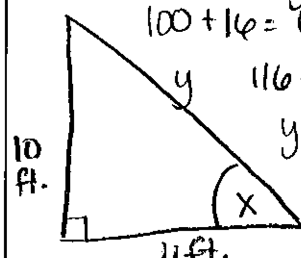
29.)

$$\frac{\overset{\frown}{\pi}}{4} = \frac{\frac{13\pi}{8}}{6.5}$$

He is correct b/c both ∠ measures are =.

$.7853 = .7853$

30.)



$$10^2 + 4^2 = y^2$$
$$100 + 16 = y^2$$
$$116 = y^2$$
$$y = 10.77032961$$

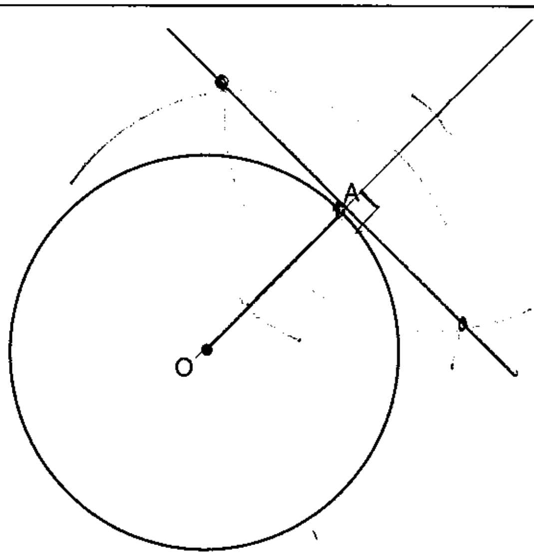
$$\frac{10.77032961}{\sin 90} = \frac{10}{\sin x}$$

$$\frac{10 \sin 90}{10.770...} = \frac{10.770... \sin x}{10.770...}$$

$\sin x = .9284766913$

$\boxed{\text{2nd sin}}$ $x = 68.19859058$ $\boxed{68°}$

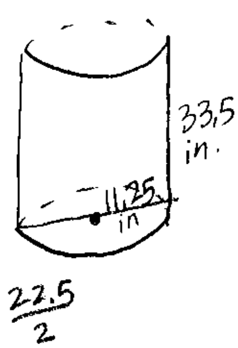
31.)



32.)

Part III

$\boxed{1 \text{ gal}^3 = 231 \text{ in}^3}$



$$V = \pi r^2 h$$
$$= \pi (11.25)^2 (33.5)$$
$$= 13319.86198 \text{ in}^3$$

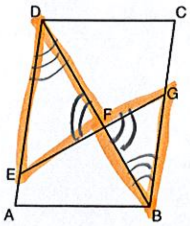
$$\frac{\text{gallons}}{\text{in}^3} = \frac{1}{231} = \frac{x}{13319.86198}$$

$$\frac{\cancel{231} x}{\cancel{231}} = \frac{13319.86198}{231}$$

$x = 57.66174017$

$\boxed{57.7 \text{ gallons}}$

33.)



Statement	Reason
① ∥gram ABCD diagonal $\overline{DFB}$	① Given
② $\angle DFE \cong \angle GFB$	② Vertical ∠s are ≅.
③ $\overline{AD} \parallel \overline{BC}$	③ In a ∥gram opposite sides are ∥.
④ $\angle EDB \cong \angle GBD$	④ When 2 ∥ lines are cut by a transversal, alternate interior ∠s are ≅.
⑤ $\triangle DEF \sim \triangle BGF$	⑤ AA ≅ AA

34.) $\frac{AB}{A'B'} = \frac{8}{20}$ $\qquad \frac{BC}{B'C'} = \frac{6}{15}$

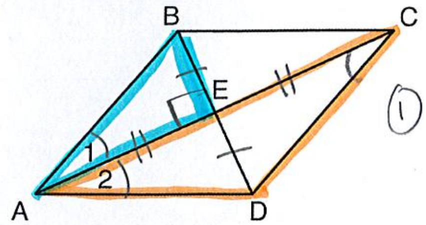
$\frac{\cancel{8}x}{\cancel{8}} = \frac{20}{8}$ $\qquad \frac{\cancel{6}x}{\cancel{6}} = \frac{15}{6}$

$x = \frac{5}{2}$ $\qquad x = \frac{5}{2}$

Dilation w/ a scale factor of $\frac{5}{2}$.

$\triangle ABC \sim \triangle A'B'C'$ b/c in a dilation corresponding ∠s remain the same measures and corresponding sides are in the same ratio.

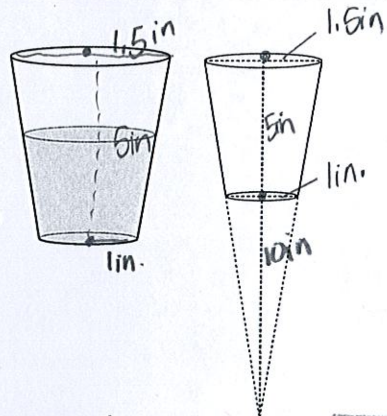
35.)



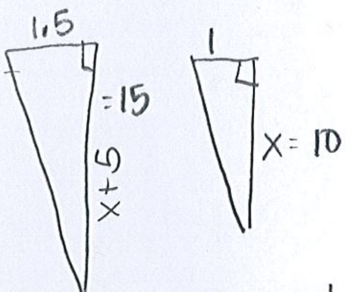
Statement	Reason
① $\overline{AC}$ & $\overline{BD}$ bisect each other $\angle 1 \cong \angle 2$	① Given
② $\overline{BE} \cong \overline{DE}$, $\overline{AE} \cong \overline{CE}$	② A segment bisector divides a segment into 2 ≅ segments.
③ Quad ABCD is a ∥gram	③ A ∥gram has diagonals that bisect each other.
④ $\overline{AB} \parallel \overline{CD}$	④ In a ∥gram, opposite sides are ∥.
⑤ $\angle 1 \cong \angle DCE$	⑤ When 2 ∥ lines are cut by a transversal, alternate interior ∠s are ≅.
⑥ $\angle 2 \cong \angle DCE$	⑥ Substitution

over ⟶

36.)



$\frac{3}{2} = 1.5$



height larger cone 15

$$\frac{1}{x} = \frac{1.5}{x+5}$$

$$1.5x = \cancel{x} + 5$$
$$-x \quad -\cancel{x}$$

$$\frac{.5x}{.5} = \frac{5}{.5} \quad \boxed{x = 10}$$

$$V_{\text{whole cone}} = \frac{1}{3}\pi r^2 h$$
$$= \frac{1}{3}\pi (1.5)^2 (15)$$
$$\boxed{= 35.34291735}$$

* The bases must be ∥ so that the 2 right △s are ~. Then a proportion can be used to solve.

$$V_{\text{sml. cone}} = \frac{1}{3}\pi r^2 h$$
$$= \frac{1}{3}\pi (1)^2 (10)$$
$$\boxed{= 10.47197551}$$

$35.34291735 - 10.47197551 =$

24.87094184 in^3

$\boxed{24.9 \text{ in}^3}$

Statement	Reason
(7) $\triangle ACD$ is an isosceles $\triangle$.	(7) An isosceles $\triangle$ has $2 \cong \angle s$
(8) $\overline{AD} \cong \overline{DC}$	(8) An isosceles $\triangle$ has $2 \cong$ sides
(9) $\parallel$gram ABCD is a rhombus.	(9) A rhombus is equilateral
(10) $\overline{AC} \perp \overline{BD}$	(10) In a rhombus diagonals are $\perp$
(11) $\angle BED$ is a right $\angle$	(11) $\perp$ lines form right $\angle s$
(12) $\triangle BED$ is a right $\triangle$	(12) Right $\triangle s$ have a right $\angle$.