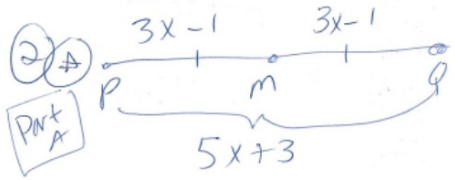
(1) Congruent $\cong$ | $\overline{BC} \cong \overline{DA}$ | $\overline{AC}$

1st blank | 2nd Blank | 3rd Blank

(2) (A)



Part A

$3x-1+3x-1=5x+3$

$6x-2=5x+3$

$+2 \quad +2$

$6x = 5x+5$

$-5x \quad -5x$

$1x = 5$ $\quad x=5$

(D)

* Vertical angles are $\cong$

Part B

$2x-7 = x+13$

$+7 \quad +7$

$2x = x+20$

$-x \quad -x$

$x = 20$

$2(20)-7 = 33$

$20+13 = 33$

$180-33 = 147°$

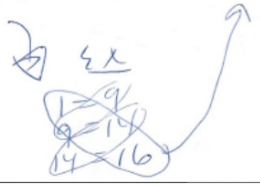
the other 2

Part C (Ø) Proof

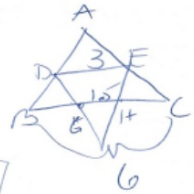
Reasons

1) Given
2) Corresponding angles $\cong$
3) Vertical angles are $\cong$
4) Corresponding angles are $\cong$
5) Transitive property

5) $\angle 1 \cong \angle 16$

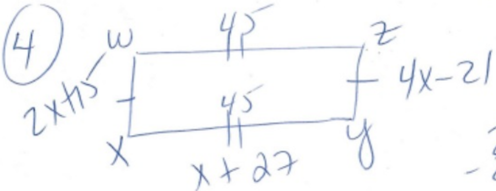


(3)



BC = 6

(4)



$2x+15 = 4x-21$

$-2x \quad -2x$

$15 = 2x - 21$

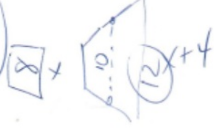
$+21 \quad +21$

$\frac{36}{2} = \frac{2x}{2}$

x = 18

$18 + 27 = 45$

(5)



$2 \cdot 10 = \frac{1}{2}(x + x+4) \cdot 2$

$20 = (2x+4)$

$20 = 2x+4$

$-4 \quad -4$

$\frac{16}{2} = \frac{2x}{2}$

x = 8 ft Part A or 96 in

$x+4$

$8+4 = 12$ ft 144 in

$96 \div 3 = 32 + 1$ corner $= 33$

$144 \div 3 = 48 + 1$ corner $= 49$

$82/25 = 3.28$

$33 + 49 = 82$

4 bags

(6) $AB = ED$

$2x+7 = 5x-2$

$-2x \quad -2x$

$7 = 3x-2$

$+2 \quad +2$

$\frac{9}{3} = \frac{3x}{3}$ $\boxed{x=3}$

$4(3)+5 = \boxed{17}$ (EF)

Yes Congruent ASA

(7) $\frac{4}{(5x-3)} \quad \frac{5}{(4x+3)}$ or $\frac{4}{5} \quad \frac{(5x-3)}{(4x+3)}$

cross multip'g

$4(4x+3) = 5(5x-3)$

$16x+12 = 25x-15$

$-16x \quad -16x$

$12 = 9x-15$

$+15 \quad +15$

$\frac{27}{9} = \frac{9x}{9}$

$3 = x$

Plug into $\overline{AC}$ $5+4(3)+3$

$5+12+3 = \boxed{20}$

(8) $\frac{2}{7} + \frac{2}{1} = \frac{2}{7} + \frac{14}{7} = \frac{16}{7}$

Point A $(\frac{16}{7}, -1)$

Part A

$-4+2=-2$

Point B $(-2, -\frac{14}{5})$

$3+2=5$

Point C $(5, 1)$

Part B

Rule

$(x, y) \rightarrow (x+2, y)$

(9)

Part A: Point B

Part B: 90°

Part C: 270°

or reflect over $x=1$

* Know your rules

90 $-y, x$

180 $-x, -y$

270 $y, -x$

(10)

A $(-5, -1)$ 180 $(-x, -y)$

A' $(5, 1)$ A'' $(3, -2)$ $x-2, y-3$

B $(-3, -1)$

B' $(3, 1)$ B'' $(1, -2)$

C $(-2, -2)$ C'' $(0, -1)$

C' $(2, 2)$

D $(-3, -4)$ D'' $(1, 1)$

D' $(3, 4)$

E $(-6, -3)$

E' $(6, 3)$ E'' $(4, 0)$

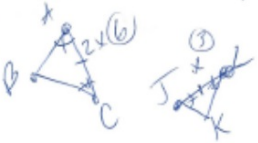
F $(-4, -2)$

F' $(4, 2)$ F'' $(2, -1)$

(11) A (2,4) A' (-2,1)
B (4,2) B' (-4,-1)
C (0,0) C'' (0,-3)
D (0,2) D'' (0,-1)

$(-x, y-3)$ Rule

(12) Reflection & Translation
OR
180° Rotation & Translation

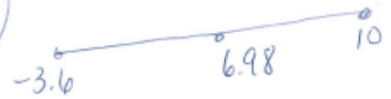
(13) 

Part A Dilation reduction
scale Factor $k = 1/2$
and Rotation

Part B
Similar
AA or

$\frac{1}{2} = \frac{3}{6}$ $\frac{\text{new}}{\text{original}}$

Similarity AA, SSS, SAS

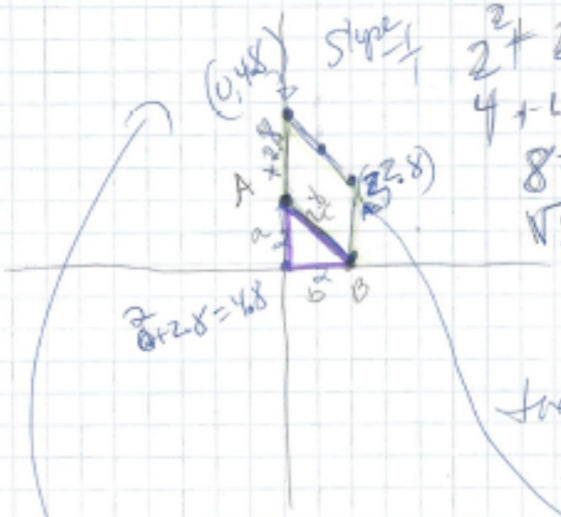
(14) 

add to get total distance
$3.6 + 10 = 13.6$

$\frac{7}{9}$ of the way
$\frac{7}{9} \times 13.6 = 10.58$

$-3.6 + 10.58 = \boxed{6.98}$

#15



$a^2 + b^2 = c^2$

$2^2 + 2^2 = c^2$

$4 + 4 = c^2$

$8 = c^2$

$\sqrt{8} = c$

$\sqrt{4}\cdot\sqrt{2}$

$2\sqrt{2} = c$

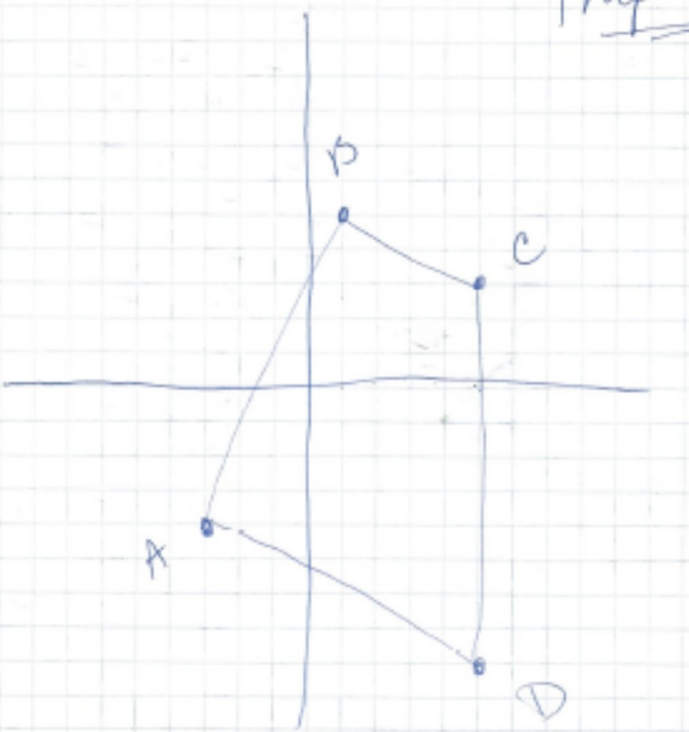
$2.8 = c$

then use slope $= -\frac{1}{1}$

(0, 4.8) and (2, 2.8)

#16

trapezoid



(17) See graph at the end too!

J (4, 2) K (2, 1)
x y x y

1:2 Ratio
total parts = 3

$(-4, 2)$ $\frac{-8+2}{3} = \frac{-6}{3} = -2$ (x)

$(2, 1)$ $\frac{1+4}{3} = \frac{5}{3}$ (y)

$\left(-2, \frac{5}{3}\right)$

(17)

Ratio 1:2
Total parts = 3
going 1/3 of the way from point J
Slope $-\frac{1}{6}$

J $(-4, 2)$ K

Slope $\frac{y}{x}$

$-\frac{1}{6} \cdot \frac{1}{3}$ of the way $= -\frac{1}{3}$ change in y

$= 2$ change in x

x: $-4 + 2 = -2$

y: $2 + -\frac{1}{3} = \frac{6}{3} - \frac{1}{3} = \frac{5}{3}$

$\left(-2, \frac{5}{3}\right)$ is your answer

(18) 

* look up pictures on google of cross-sections of pentagonal pyramid

- Triangle
- Trapezoid
- Pentagon

(19)

1-D	2-D	3-D
linear/perimeter	area (squared)	Volume (cubed)
$\frac{1}{3}$	$\left(\frac{1}{3}\right)^2 = \frac{1}{9}$	$\left(\frac{1}{3}\right)^3 = \frac{1}{27}$

(20) 

B tube

* also google for picture to help visualize

(2) Surface area

$\left(\square^3\right) \times 4$ sides $+ \left(\square^{2.5} \text{ top}\right) \times 4$

Figure 1 $(30 + 6.25) \times 4$

$36.25 \times 4 = \boxed{145}$

Figure 2 SA $2\pi rh + 2\pi r^2$

$2\pi 1.25(3) + \pi(1.25)^2$

$23.56 + 4.9 = 28.46$

$\times 4$

$\boxed{113.85}$

Figure 3

Front/Back $\square^3_2$ $(2 \times 3) \times 2 = 12$

Side $\square^3_2$ $(2 \times 3) = 6$

top $\triangle^2$ $= \frac{1}{2}(bh)$ $\frac{1}{2}(2 \cdot 2) = 2$

$12 + 6 + 2 = 20 \times 4 = \boxed{80}$

$145 + 113.85 + 80 = 278.85$

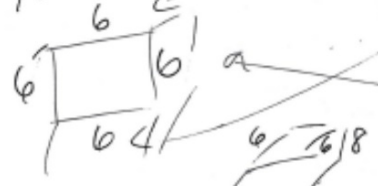
$400 - 278.85 = \boxed{121.15}$ left over

Part B

$\boxed{1 \text{ gallon}}$

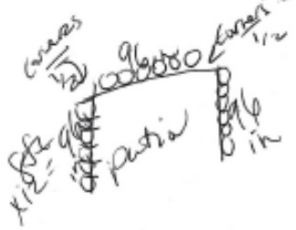
22

16 - 1.5 - 1 - 1.5 = 12 / 2 = 6



8 - 1 - 1 = 6

$V = 6 \times 6 \times 8 = 288$



96 / 16 (each brick) = 6

× 3

18 + 1 for 2 corners

19

$V = l \times w \times H$

$V = 6 \times 6 \times 8 = 288$

× 19 Bricks

$5472\ in^3$

$5472 / 1728$

Soil 1 Bag 1 cubic ft

$12^3\ in^3 = 1728$ cubic inch

3.16 so 4 bags

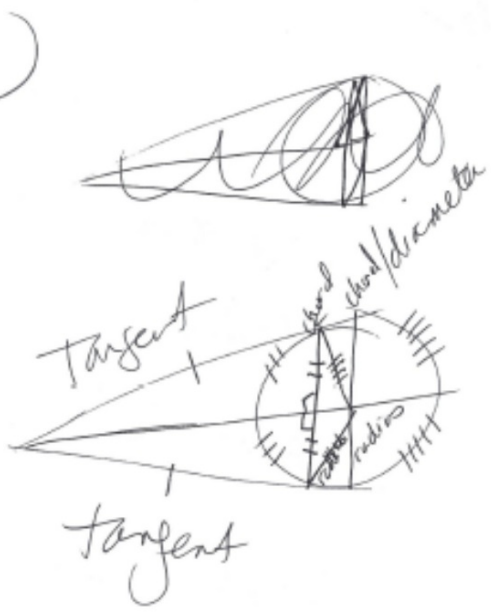
#23 order is

5 it is an
3 angle
1 bisector
6
2
4 construction

#24 order is

3 it is
1 an
5 perpendicular
2 bisector
4 construction

25



27

$x(1.9) = 1.3(x+1.3)$

$1.9x = 1.3x + 1.69$

$-1.3x \quad -1.3x$

$\frac{0.6x}{0.6} = \frac{1.69}{0.6}$

$x = 2.82$

28

$140.4 = \frac{1}{2}(360 - x - x)$

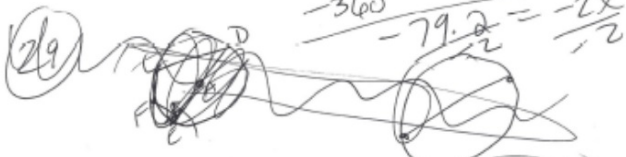
$2(140.4 = \frac{1}{2}(360 - 2x))2$

$280.8 = 360 - 2x$

$-360 \quad -360$

$\frac{-79.2}{-2} = \frac{-2x}{-2}$

29



$x = 39.6°$

29

Part A: $\angle C = 180 - 73 = 107$

Part B: $\angle D = \frac{1}{2}(50+34) = 42^\circ$

$\angle F = 180 - 42 = 138^\circ$

30

Part A:

$2x + 30 = 90$

$-30 \quad -30$

$\frac{2x}{2} = \frac{60}{2}$

$x = 50$

$2(30) - 20$

$60 - 20 = 40$

$\angle D + \angle A = 90$

$x + 40 = 90$

$-40 \quad -40$

$x = 50$

(31) 

$\frac{360}{16} = 22.5$

$\frac{22.5}{360} \times \pi r^2$

$\frac{22.5}{360} \times \pi(11.5)^2 =$

8.27π or 25.97

(32) $x^2+2x+1 + y^2-4y+4 = 4$

$\left(\frac{2}{2}\right)^2 = 1 \quad (x+1)(x+1) + (y-2)(y-2) \quad \left(\frac{-4}{2}\right)^2 = 4$

$(x+1)^2 + (y-2)^2 = -E + 4 + 1$

$0 = -E + 5$

$E = 5$

$E < 5$

(33) equation of a circle

$(x-h)^2 + (y-k)^2 = r^2$

(h, k) Center

r = radius

$(x-(-1))^2 + (y-2)^2 = 1^2$

$(x+1)^2 + (y-2)^2 = 1$

(34) $(x-h)^2+(y-k)^2=r^2$

$(x-(-2))^2+(y-(-5))^2=r^2$

use distance formula to find radius

$(-2,-5)\ (5,0)$

$x_1\ y_1\quad x_2\ y_2$

$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$\sqrt{(5-(-2))^2+(0-(-5))^2}$

$(7)^2+(5)^2$

$49+25$

$74 = r^2$

$r=\sqrt{74}$

$(\sqrt{74})^2$

74

$(x+2)^2+(y+5)^2=74$

35) $x^2 - 6x + y^2 + 8y$

$\left(\frac{-6}{2}\right)^2 = 9$ $\quad x^2 - 6x + 9$ $\quad \left(\frac{8}{2}\right)^2 = 16$ $\quad y^2 + 8y + 16$

$(x-3)(x-3)$ $\quad (y+4)(y+4)$

$(x-3)^2 + (y+4)^2 = -5 + 9 + 16$

$(x-3)^2 + (y+4)^2 = (\sqrt{20})^2$

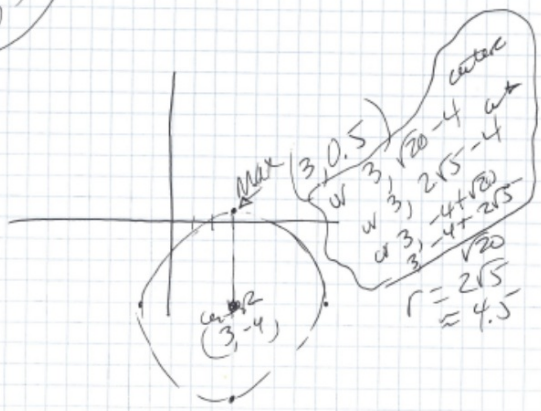
$\sqrt{20} \approx 4.5$

$(x-3)^2 + (y+4)^2 = (2\sqrt{5})^2$

$(x-h)^2 + (y-k)^2 = r^2$

center $(3, -4)$ $\quad$ radius $= 2\sqrt{5}$ ✡ see graph

35)

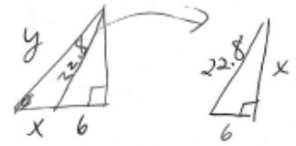


or $(3, \sqrt{20} - 4)$ or $(3, 2\sqrt{5} - 4)$ or $(3, -4 + \sqrt{20})$ or $(3, -4 + 2\sqrt{5})$

$\sqrt{20}$

$r = 2\sqrt{5} \approx 4.5$

36



$a^2+b^2=c^2$

$x^2+6^2=(22.8)^2$

$x^2+36=519.84$

$-36 \quad -36$

$x^2=483.84$

$x=22$

(A) $\sin\phi=\frac{opp}{hyp}$ $\frac{22}{y}$

(F) $\tan\phi=\frac{opp}{adj}$ $\frac{22}{x+6}$

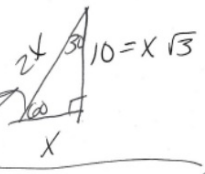
37

$\sin 33.7^\circ=\frac{opp}{hyp}$ $\frac{BC}{AB}$

$\sin 33.7=\frac{opp}{hyp}$ $\frac{DE}{DF}$

$\frac{BC}{AC}=\frac{DE}{EF}$

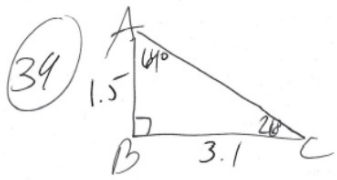
38



$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{10}{\sqrt{3}} \quad \frac{\sqrt{3}}{\sqrt{3}} = \frac{10\sqrt{3}}{\sqrt{9}} \quad x = \frac{10\sqrt{3}}{3}$

$2\left(\frac{10\sqrt{3}}{3}\right) = \boxed{\frac{20\sqrt{3}}{3}}$

39



Part A: $\angle C = \frac{\text{opp}}{\text{adj}}$

$\tan^{-1}\angle C = \frac{1.5}{3.1} = 26^\circ$

$\tan^{-1}\angle A = \frac{3.1}{1.5} = 64^\circ$

$+ \quad 90$

$x \cdot \sin 26 = \frac{\text{opp}}{\text{hyp}} \quad \frac{1.5}{x} \cdot x$

$\frac{x(\sin 26)}{(\sin 26)} = \frac{1.5}{(\sin 26)} = 3.44$

$(1.5)^2 + (3.1)^2 = c^2$

$2.25 + 9.61 = c^2$

$11.86 = c^2$

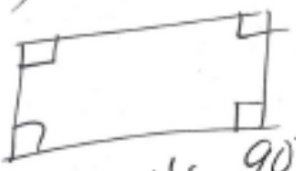
$\sqrt{11.86} = (3.44)$

(41) A) False

a trapezoid is a quadrilateral that doesn't have 4 right angles

counter-example →

D) False



all = ∠'s 90°

NOT ≅

all = ∠'s = 90°

Counter-Example A