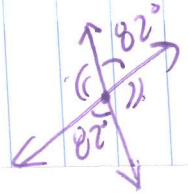
L13-2 "Vertical ∠s" → equal

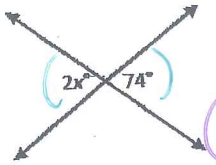


Name: _____ per: _____

Writing Equations for Vertical Angles

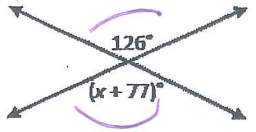
Find the values of x and y.

1. $x =$ 37



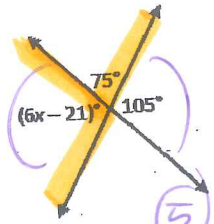
① $2x = 74$
$\frac{2x}{2} = \frac{74}{2}$
$x = 37$

2. $x =$ _____



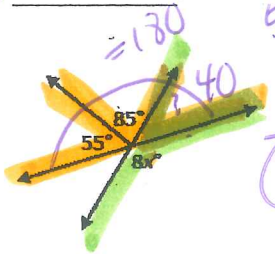
② $126 = x + 77$

3. $x =$ 21



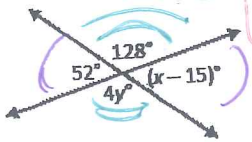
③ $6x - 21 = 105$
$+21 \quad +21$
$6x = 126$
$\frac{6x}{6} = \frac{126}{6}$
$x = 21$

4. $x =$ _____



④ $8x + 40 = 180$
$55 + 85 = 140$

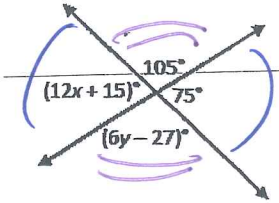
5. $x =$ 67
$y =$ 32



⑤

x	y
$52 = x - 15$	$128 = 4y$
$+15 \quad +15$	$\frac{128}{4} = \frac{4y}{4}$
$67 = x$	$32 = y$

6. $x =$ _____
$y =$ _____



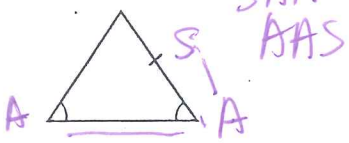
⑥

x	y
$12x + 15 = 75$	$6y - 27 = 105$

L 14-2 "UNIQUE TRIANGLES" PG. 151

UNIQUE TRIANGLES- Only one triangle can be formed with the given dimensions.

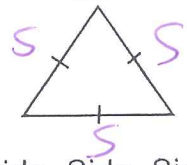
AAS



SAA
AAS

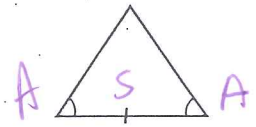
Angle, Angle, Side

SSS



Side, Side, Side

ASA

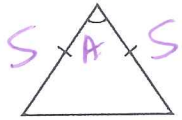


Angle, Side, Angle

With included Side

The side is in the middle of the two angles therefore, it's included

SAS



Side, Angle, Side

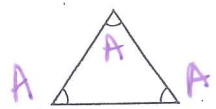
With included Angle

The angle is in the middle of the two sides therefore, it is included

UNIQUE	NOT UNIQUE
AAS ↔ SAA	AAA
SSS	SSA ↔ ASS
ASA	
SAS	

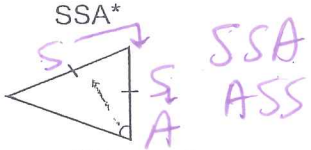
NOT UNIQUE- Many triangles can be formed with the given dimensions.

AAA



Angle, Angle, Angle

SSA*



SSA
ASS

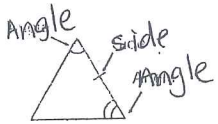
Side, Side, Angle

When side measurements are given the side opposite the angle must be the longest side otherwise the triangle is NOT UNIQUE.

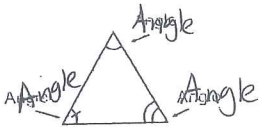
GUIDED EXAMPLES:

Classify each triangle as SAS, SSS, ASA, AAS, SSA, OR AAA.
Then specify if the triangle is UNIQUE or NOT UNIQUE.

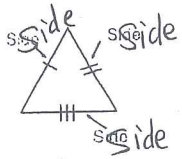
Note: The triangles are examples and are not drawn to scale.



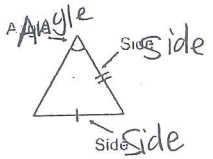
ASA
Unique



AAA
NOT Unique



SSS
Unique

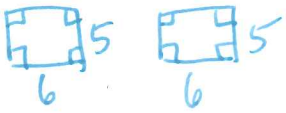


SSA
NOT Unique

L15-1 Similar Figures p. 159

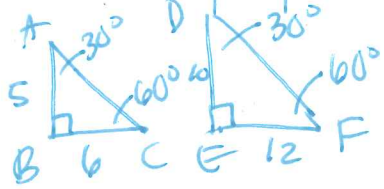
LT: Identify if polygons are similar.
Find a common ratio for corresponding lengths

Vocab: congruent figures ($\cong$)
↳ exactly the same
↳ same lengths & angles



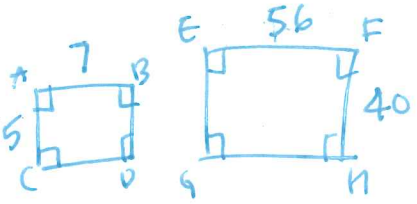
Corresponding parts
↳ $\overline{AB}$ & $\overline{DE}$
$\angle B$ & $\angle E$

Similar figures ($\sim$)
↳ same angles BUT
lengths can be diff.
↳ corresponding ones have to be proportional



A) are they similar?
Step 1: check $\angle$s first
they have to be =
2: corr. sides proportional?

ex)



$\angle$s = yes!
all 90°

lengths $\overline{AB}$ corr. $\overline{EF}$
& $\overline{AC}$ corr $\overline{EG}$

write as a fraction

$$\frac{AB}{AC} = \frac{EF}{EG}$$

cross x or shortcut →

$$\frac{7}{5}\left(\frac{\times 8}{\times 8}\right)\frac{56}{40}$$

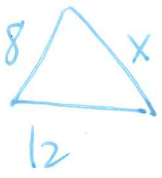
same

yes! proportional

L15-2 Indirect Measures pg. 164

A) Find missing side of Similar figures

ex)



$X = 12$

Step 1: Determine Scale Factor or write proportion

$\frac{8}{x} = \frac{2}{3}$ $\quad 2x = 24$

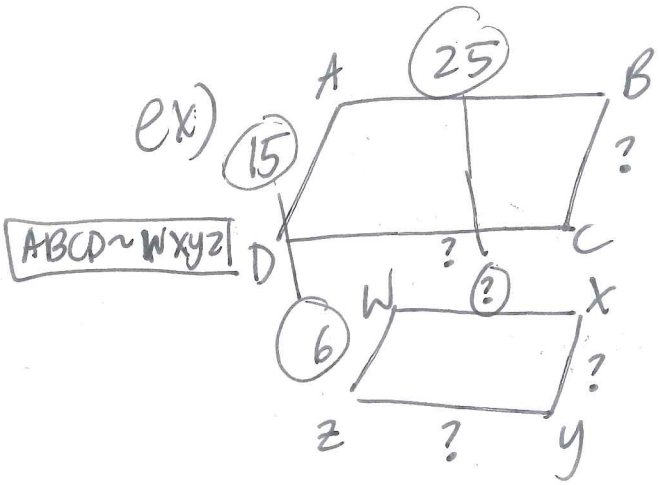
$\frac{2x}{2} = \frac{24}{2}$

$x = 12$

OR

$\frac{8}{2} = \frac{x}{3}$ = same

ex)



Q1) What's $\overline{WX}$?

Step 1: pick 2 sides you know (corresponding)

$\frac{AD}{WZ} = \frac{15}{6}$

Step 2: match up what you're looking for.

$\frac{AB}{WX} = \frac{25}{?}$

write proportion solve for n.

$\frac{15}{6} = \frac{25}{n}$

$\frac{15n}{15} = \frac{150}{15}$

$n = 10$

$\overline{WX} = 10$

$\begin{array}{r} 3 \\ 25 \\ \times 6 \\ \hline 150 \end{array}$

Q2) What's $\overline{XY} = ? \rightarrow 6$

$\overline{ZY} = ? \rightarrow 10$

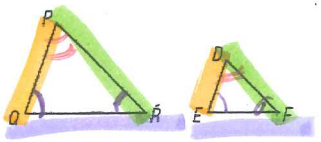
They're same since it's a parallelogram :)

Name _____ Date: _____ Per: _____

L15-1 = Similar Figures practice

Given the similar figures, name all pairs of corresponding sides and angles. Look at the similarity statement to help.

1. $\triangle PQR \sim \triangle DEF$

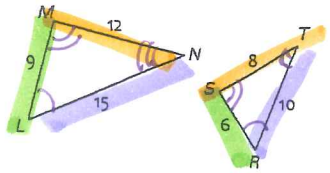


$\overline{QP} \rightarrow \overline{ED}$ $\quad \angle Q \cong \angle E$

$\overline{PR} \rightarrow \overline{DF}$ $\quad \angle P \cong \angle D$

$\overline{RQ} \rightarrow \overline{FE}$ $\quad \angle R \cong \angle F$

2. $\triangle LMN \sim \triangle RST$

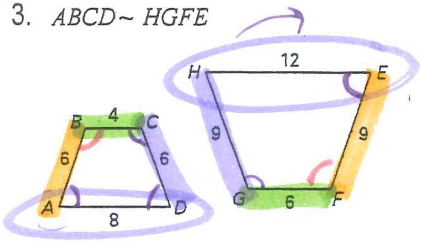


$\overline{LM} \rightarrow \overline{RS}$ $\quad \angle L \cong \angle R$

$\overline{MN} \rightarrow \overline{ST}$ $\quad \angle M \cong \angle S$

$\overline{NL} \rightarrow \overline{TR}$ $\quad \angle N \cong \angle T$

3. $ABCD \sim HGFE$



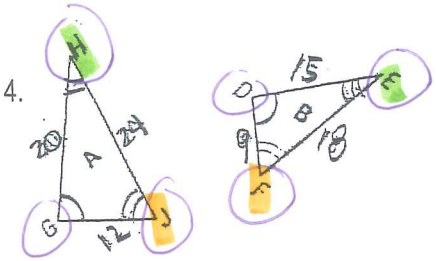
$\overline{AB} \rightarrow \overline{EF}$ $\quad \angle A \cong \angle E$

$\overline{BC} \rightarrow \overline{FG}$ $\quad \angle B \cong \angle F$

$\overline{CD} \rightarrow \overline{GH}$ $\quad \angle C \cong \angle G$

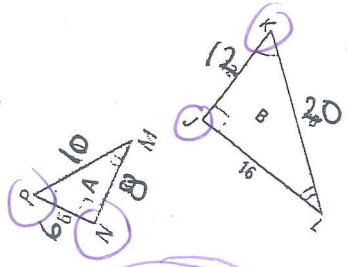
$\overline{DA} \rightarrow \overline{HE}$ $\quad \angle D \cong \angle H$

4.



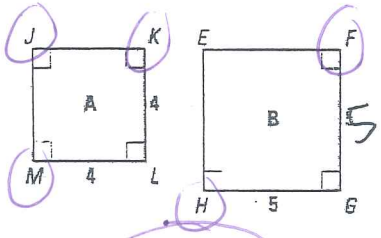
$\triangle HJG \sim \triangle EFD$

5.



$\triangle NPM \sim \triangle JKL$

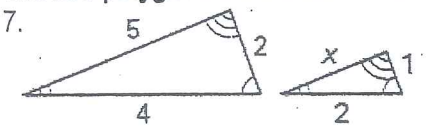
6.



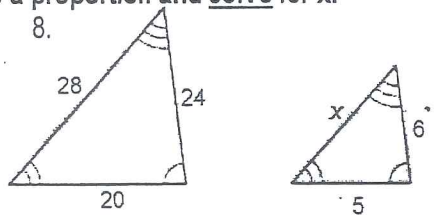
$KJML \sim FEHG$

The two polygons are similar. Write a proportion and solve for x.

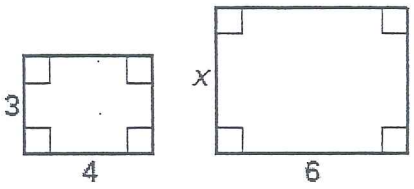
7.



8.



9.

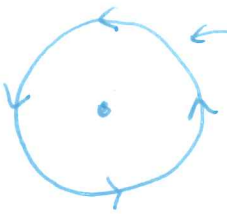


L16-1 Circumference of a Circle P. 169

↳ around/perimeter

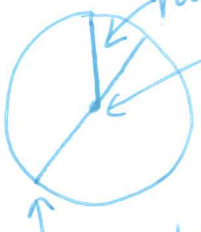
LT: I will apply the formula to find the Circumference

Vocab:



circumference around the circle

π = ratio of $\frac{C}{d}$ or 3.14



radius – any point to center

center

diameter

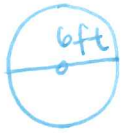
one end to another through the center

A) How to find circumference

Step 1: plug into formula

$C = \pi d$ ← diameter

↑ Circum. ↑ 3.14 pi

ex) 

$r = 3$

$d = 6$

$C = \pi d$

$C = 3.14(6)$

$C \approx 18.84$ ft

"about"

$3.14 \times 6 = 18.84$

B) If given Circumf.

$C = 88$ yards What's diameter?

$C \approx \pi d$ (plug in)

$88 \approx 3.14d$

$\frac{3.14}{3.14} \quad \frac{3.14d}{3.14}$

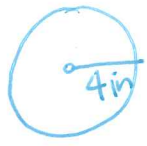
$28 \approx d$

$3.14\overline{)88}$ = 28.025...

What's radius then?

$d \approx 28$

$r \approx$ ½ the d $\frac{28}{2} = \boxed{14}$

ex) 

$r = 4$ twice as big

$d = 4 \times 2 = 8$

$C \approx \pi d$

$3.14(8)$

$C \approx 25.12$ in

$3.14 \times 8 = 25.12$

L16-2 Area of a Circle p. 173

LT: I will find the area of a circle

Vocab: Area  # of square units ← "square"

units²

Qs

A) Area of a circle

Area ≈ π × radius²

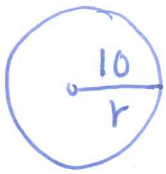
↑ approx.

$A \approx \pi r^2$

Step 1: Find radius

2: Use formula

As.

ex) 

r = 10

$A \approx \pi r^2$

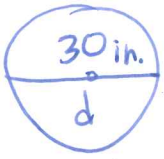
$3.14(10)^2$

$10 \cdot 10$

$3.14 \cdot 100$

$3.14 \times 100 = 314$

314 units^2

ex) 

d = 30 ÷ 2 = 15

r = 15

$A \approx \pi r^2$

$3.14(15)^2$

$(3.14)(225)$

225×3.14

$15 \times 15 = 225$

706.5 in²

L16-2 - Circle - Area

$\text{Area} \approx \pi \cdot r^2$

$r = 3$

$A \approx \pi r^2$

$3.14(3)^2$

$3 \cdot 3$

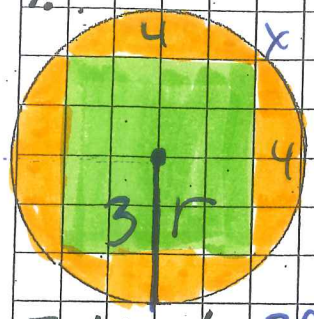
$3.14(9)$

28.26 units

Name _____ Period _____

Find the Area

1.

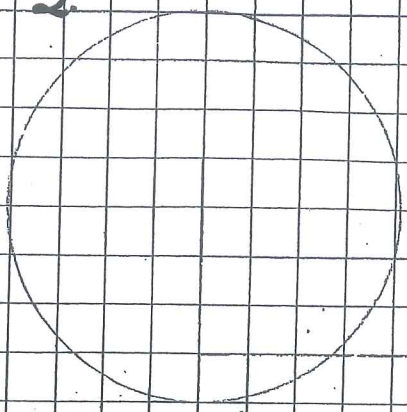


16

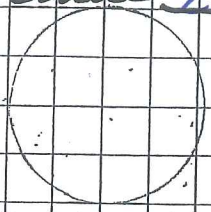
Estimate 28

Actual 28.26

2.



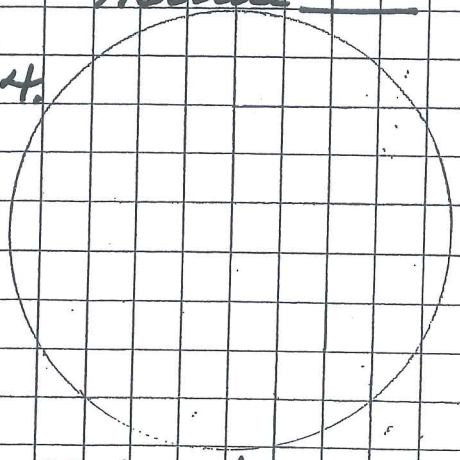
3.



Estimate _____

Actual _____

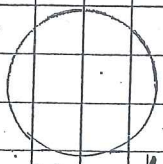
4.



Estimate _____

Actual _____

5.



Estimate _____

Actual _____

Estimate _____

Actual _____

L16-2 part 2

A) Find diameter or radius

$C \approx 25ft$ whats the diameter?

$C \approx \pi d$

25 — given to you

Step1: plug in what you know

$C \approx \pi d$

$\frac{25}{3} \approx \frac{3d}{3}$

$8.3 \approx d$

Step2: Inverse op.

$3\overline{)25.0}$ = $8.\overline{3}$
-24
10

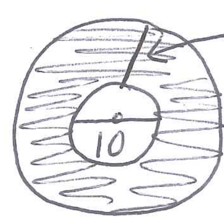
B) Concentric Circles

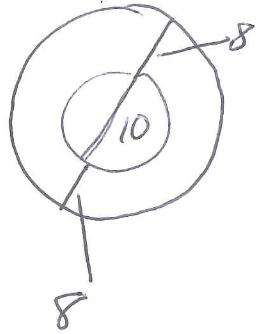
What's the area of the shaded circle only?

Step1: Find the area of both circles

2: subtract to get only the shaded region

ex)





① Larger circle

$A \approx \pi r^2$ $d = 8+8+10$

$3(13)^2$ $26 \div 2$

$3(169)$ $r = 13$

507

13 × 13: 39, 130, 169

② Little one

d = 10 ÷ 2, r = 5

$A \approx \pi r^2$

$3(5)^2$

$3(25) = 75$

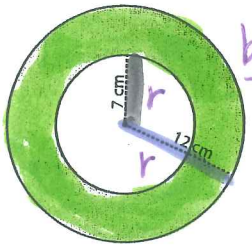
now = (shaded) = 507

(small circle) = 75

$507 - 75 = 432$

Find the exact area of each shaded region.

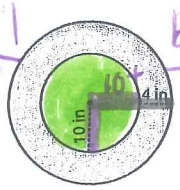
1)



Area = ☐

2)

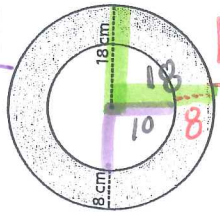
big | li
12 | 7



Area = ☐

3)

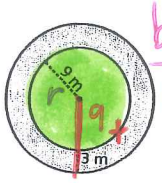
big | li
14 | 10



big | li
18 | 10
8

Area = ☐

4)



Area = ☐

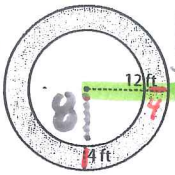
5)

big | li
12 | 9

Area = ☐

6)

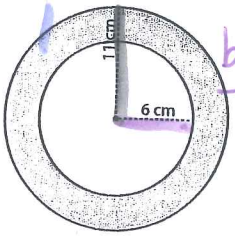
big | li
7 | 2



big | li
12 | 8

Area = ☐

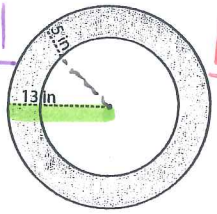
7)



Area = ☐

8)

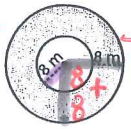
big | li
11 | 6



Area = ☐

9)

big | li
13 | 8



big | li
16 | 8

Area = ☐

Concentric Circles – Area

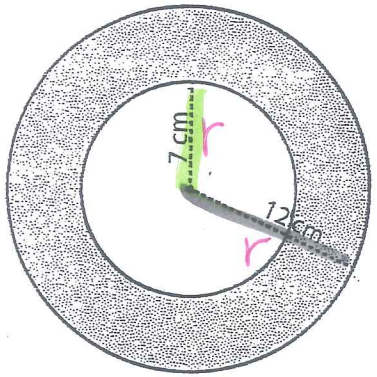
step 1: Find radius of both

2: Area of both

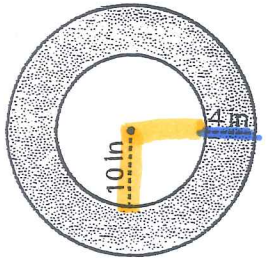
3: subtract

ex)

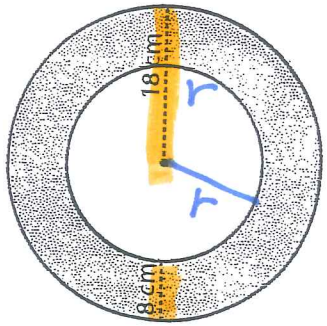
1)



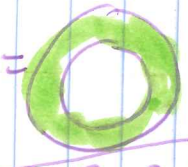
2)



3)



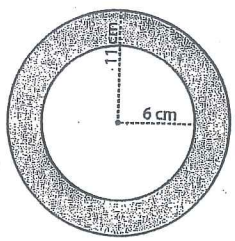
big	lil
$r=12$	$r=7$
$A \approx \pi r^2$	$A \approx \pi r^2$
$3.14(12)^2$	$3.14(7)^2$
$3.14(144)$	$3.14(49)$
452.16	153.86

$452.16 - 153.86 =$ 

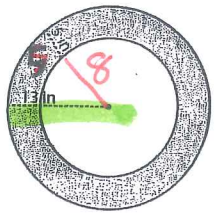
$A \approx 298.3 \text{ cm}^2$

HW

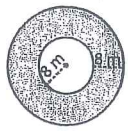
7)



8)



9)



(7)

big	lil
r = 11	r = 6
$3.14(11)^2$	$3.14(6)^2$
$\angle$ (121)	$\angle$ 36
379.94	113.04
266.9	(4)

big	lil
r = 13	r = 8
$3.14(13)^2$	$3.14(8)^2$
$\angle$ 169	$\angle$ 64
530.66	200.96
329.7	(4)

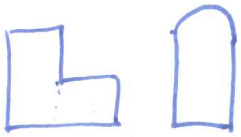
big	lil
r = 16	r = 8
602.88	
(4)	

L17-1 Area of Composite Figures p.179

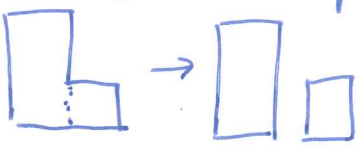
LT: I will determine the area of geometric & composite figures.

vocab: geometric figures

composite figures
↳ 2 or more geometric figures



decompose
↳ divide/cut shape



Qs

A) Geometric Shape Area

① Quadrilaterals

4-sided

$A = bh$

Area, base, height

As

ex)  2

5cm

$A = bh$

$(5)(2)$

"squared"

$A = 10\,cm^2$

ex)

height, 4, 3cm (side), 5 (base)

$A = bh$

$(5)(4)$

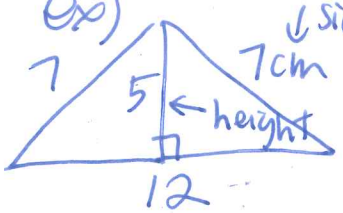
$A = 20\,cm^2$

② Triangle 

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

↑ half because you cut in half.

ex)



7, 5, 7cm (side), height, 12 (base)

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

$\frac{1}{2}(12)(5)$

$\frac{1}{2}(60)$

$30\,cm^2$

quadrilateral but diff. bases.

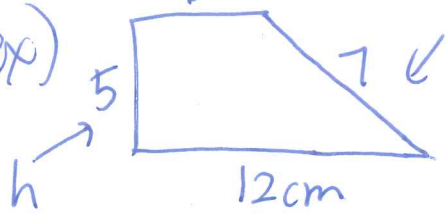
③ Trapezoid

bases are diff.

$A = \frac{1}{2}h(b_1 + b_2)$

↑ cut in ½ ↑ height ↑ base 1 ↑ base 2

ex)



$A = \frac{1}{2}h(b_1 + b_2)$

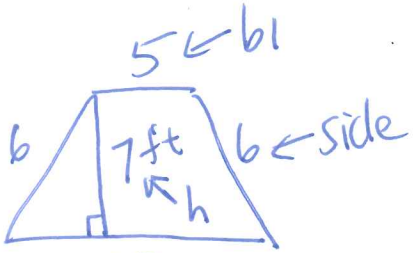
$\frac{1}{2}(5)(6+12)$

$\frac{1}{2}(5)(18)$

$9(5) = 45\text{cm}^2$

you can cut any # in ½ (1)

ex)



$A = \frac{1}{2}h(b_1 + b_2)$

$\frac{1}{2}(7)(5+10)$

$\frac{1}{2}(7)(15)$

$\frac{1}{2}(105)$

52.5ft^2

$\begin{array}{r} 3 \\ 15 \\ \times\ 7 \\ \hline 105 \end{array}$

$\begin{array}{r} 52.5 \\ 2\overline{)105} \\ -10\downarrow \\ \hline 05 \\ -4 \\ \hline 10 \end{array}$

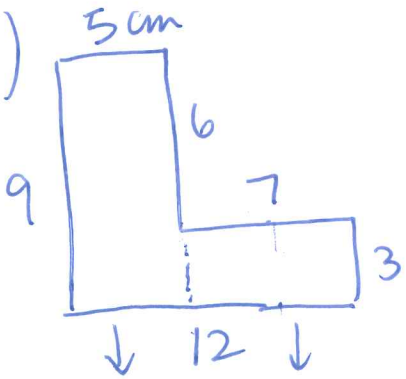
B) Decompose "Complex" Composite shapes

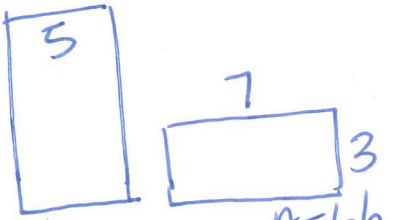
step 1: Break apart shape

2: find area of each

3: ADD put back together

ex)





$45 + 21 = 66\text{cm}^2$

← $A = bh$ $(9)(5) = 45$ $A = bh$ $(3)(7) = 21$

L17-1 - Area of Quads, △, trapezoids

Geometric Shapes

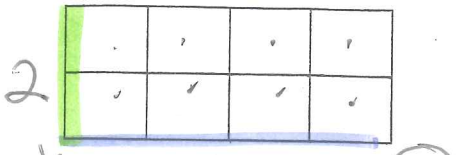
A) Quadrilaterals

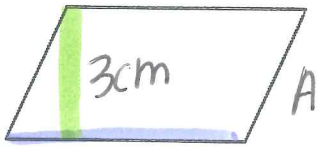
square: b, h ← A = bh

rectangle: base, height

parallelogram: b, h

trapezoid:

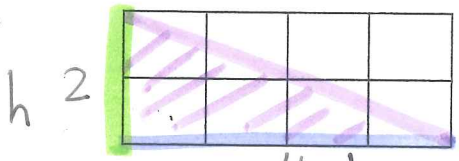




$A = (4)(3)$

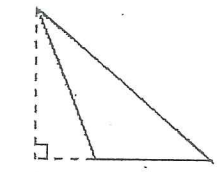
$12\ cm^2$

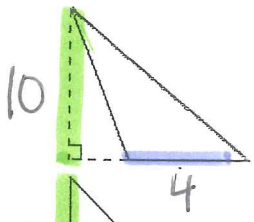
B) Triangles



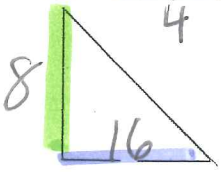
$A = \frac{bh}{2}$ $\quad \frac{4(2)}{2} = \frac{8}{2} = 4$

or $A = \frac{1}{2}bh$

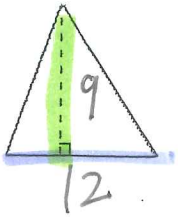




$A = \frac{4(10)}{2} = 20$



$A = \frac{16(8)}{2} = 8(8) = 64$



$A = \frac{12(9)}{2} = 6(9) = 54$