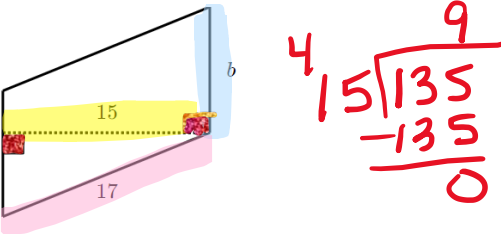Mod 12
Triangles and Parallelograms part 2

Name_____ Key ☺

Use these examples to help you complete the Khan Academy lessons that are due by April 19th.

You also have Khan due tonight (April 14th) based on the notes from last class.

Find missing length when given area of a parallelogram

The parallelogram shown below has an area of 135 units².

$$4$$
$$15\overline{)135}$$
$$\underline{-135}$$
$$0$$
$$9$$

Find the missing base.

Area = base times height

They have given you the area and the height.

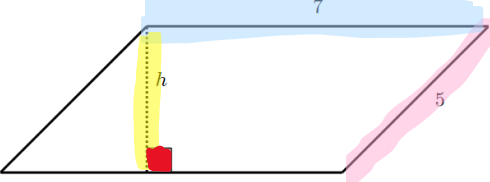They also gave you the side length (17) but you don't need that for area.

135 = base times 15

base = 9

135 divided by 15 = base

The parallelogram shown below has an area of 21 units².

Find the missing height.

Area = base times height

They have given you the area and the base.

They also gave you the side length (5) but you don't need that for area.

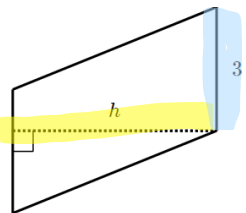21 = 7 times height

21 divided by 7 = height

3 = height

The parallelogram shown below has an area of 15 units².
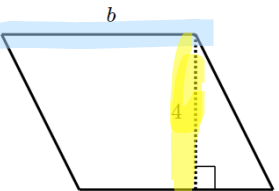

Area = base times height

They have given you the area and the base.

15 = 3 times height

15 divided by 3 = height

5 = height

The parallelogram shown below has an area of 20 units².

Find the missing base.

Area = base times height

They have given you the area and the height.

20 = base times 4

20 divided by 4 = base

5 = base

Name_____

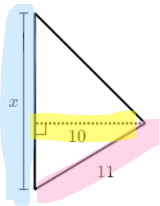## FIND MISSING LENGTH WHEN GIVEN AN AREA OF A TRANGLE

$\div \frac{1}{2}$ $\times \frac{2}{1}$

The triangle shown below has an area of 75 units².

Find the missing side.

x

10

11

$75 = \frac{1}{2}(15)(10)$

$75 = \frac{1}{2}(150)$ ✔

Area of a triangle = One half times the base times the height.

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

Substitute 75 for A, 10 for h, and solve for b.

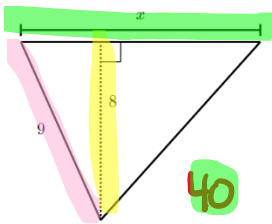$75 = \frac{1}{2}b\,(10)$

Divide the given area by the given height.

$\frac{75}{10} = \frac{1}{2}b$ then, multiply both sides by 2 to get rid of the fraction. → $\frac{2}{1} \cdot \frac{75}{10} = b$

$\frac{150}{10} = b$ then reduce the fraction so $b = 15$

(On this problem they also gave you the diagonal length (11), but you don't need it for area.

The triangle shown below has an area of 40 units².

Find the missing side.

x

8

9

$\frac{40}{8} = 5$

$5 \times 2 = \boxed{10}$

Area of a triangle = One half times the base times the height.

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

Substitute 40 for A, 8 for h, and solve for b.

$40 = \frac{1}{2}b\,(8)$

Divide the given area by the given height.

$\frac{40}{8} = \frac{1}{2}b$ 40 over 8 equals 5 → $5 = \frac{1}{2}b$

then, multiply both sides by 2 to get rid of the fraction. → $2 \cdot 5 = b$ so $b = 10$

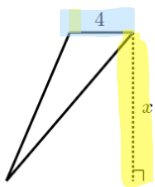(On this problem they also gave you the diagonal length (9), but you don't need it for area.

check:
$40 = \frac{1}{2}(8)(10)$
✔ $40 = \frac{1}{2}(80)$

The triangle shown below has an area of 16 units².

Find x.

4

x

Area of a triangle = One half times the base times the height.

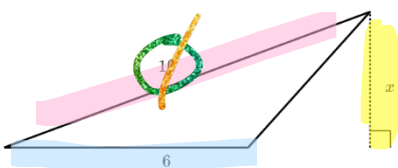$A = \frac{1}{2}bh$

Substitute __16__ for A, __4__ for b, and solve for h.

$16 = \frac{1}{2}(4) \cdot h$

Divide the given area by the given base, then multiply by 2.

$\frac{16}{4} = 4 \times 2 = 8$ height

The triangle shown below has an area of 12 units².

Find x.

6

x

Area of a triangle = One half times the base times the height.

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

Substitute __12__ for A, __6__ for b, and solve for h.

$12 = \frac{1}{2}(6) \cdot h$

Divide the given area by the given base, then multiply by 2.

$\frac{12}{6} = 2 \times 2 = 4 = $ height

(On this problem they also gave you the diagonal length (10), but you don't need it for area.

Name:_____   Date:_____
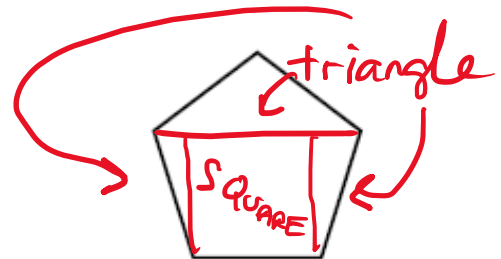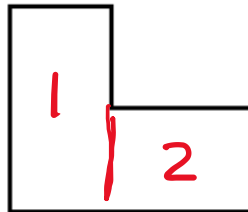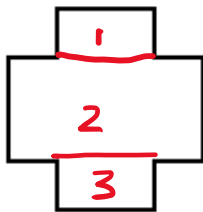
AREA OF COMPOSITE FIGURES GEOMETRY

VOCABULARY

- **Composite Figures:** Figure is made up of __triangles__, squares, rectangles, and other __2__-dimensional figures.
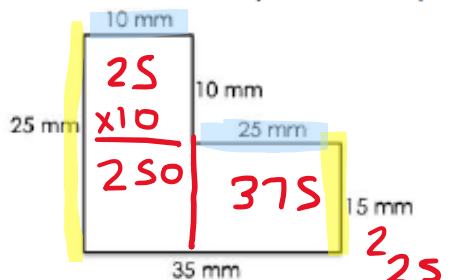
GUIDED NOTES:

1. A composite figure is not a standard __basic__ shape.
2. To find the area of a composite figure, __divide__ it into figures with areas you know how to find.
3. Then, find the __sum__ of the areas of those figures.
4. Separate the composite figures below into basic shapes that you can find the area of. Label each shape and write the formula that you would use to find the area.
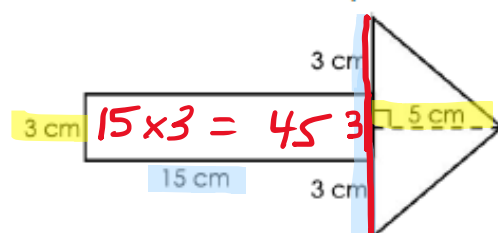
(figures labeled 1, 2, 3; second figure labeled 1, 2; third figure labeled triangle and SQUARE)

GUIDED PRACTICE:

Find the area of the composite shape:

10 mm
25
x10
250   375
25 mm   10 mm
25 mm
35 mm   15 mm

1
250
+ 375
  625

2
25
x 15
125
+ 250
  375

Find the area of the composite shape:

3 cm
3 cm $15 \times 3 = 45$ 3   5 cm
15 cm   3 cm

45
+ 22.5
  67.5

base = 9
$\frac{1}{2}(9)(5)$
$\frac{1}{2}(45)$
= 22.5

22.5
$2\overline{)45.0}$
-4
05
-4
16
-10
0

PRACTICE PROBLEMS:

1 Find the area of the figure below:

8 in.

$8 \times 3 = 24$

3 in.

$\frac{1}{2}(11)(10)$

$\frac{1}{2}(110)$

$8 \times 10 = 80$

10 in.

55

8

11

h

30 in.
-8
$22 \div 2 = 11$

11

`24
80
55
+ 55
214 in²`

2 Find the area of the figure below:

14 cm

²14
×16
84
14 8
224

8 cm

4

4

8 cm

14 cm

22
−14
8 ÷ 2
= 4

2 triangles
$\frac{1}{2}(16)(4)$
$\frac{1}{2}(64)$
32 × 2 = 64

224
+ 64
288 cm²

3 Find the area of the figure below:

10 in

$10 \times 8 = 80$

8 in.

4 in

80
+16
96 in²

$\frac{1}{2}(8)(4)$
$\frac{1}{2}(32)$
= 16

4 Find the area of the figure below:

5 m

5×6
30

6 m

20 m

16 m

10 m

$10 \times 25 = 250$

25 m

250
+ 30
280 m²