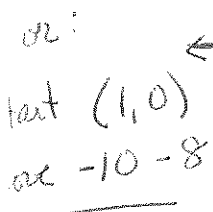


- ② $DE = \frac{1}{2} DC$
③ $MO \times 2$ at all

 $(-9, -8)$

slope \overleftrightarrow{CD} :

$$\frac{-5}{4}$$

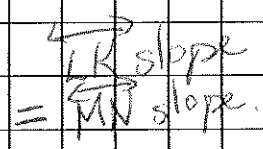
\perp slope = $\frac{4}{5}$

Count 2 times
→ from D:

start (1, 0)
move +10 +8

 $(11, 8)$

- $\textcircled{-3}$ ~~pari~~
 $(-3, -1)$
 $(1, -9)$
 $(3, 7)$



Create 2 parallel sides of different lengths.

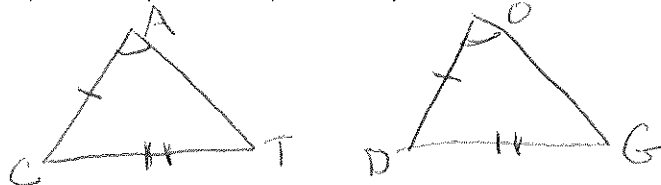
\overleftrightarrow{MN} slope = $\frac{4}{3}$

$(-6, -5)$
 $(-5, 3)$ also.

3. [10 pts] Each set of descriptions below refers to triangles $\triangle CAT$ and $\triangle DOG$. Determine whether the given information guarantees that the triangles are congruent, then write the acronym involved and report the congruence using correct notation. DO NOT EXPLAIN FURTHER. If the given information does not guarantee congruence, say so.

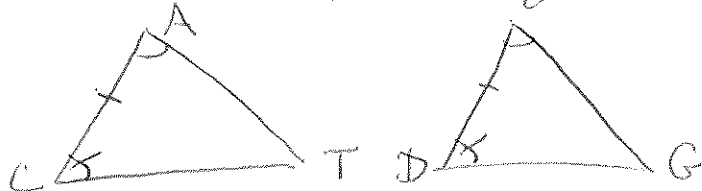
(a) $CA = 5, CT = 4, DO = 5, DG = 4, \angle A \cong \angle O$

③
a.c.r.s.
① \cong markings
or markings



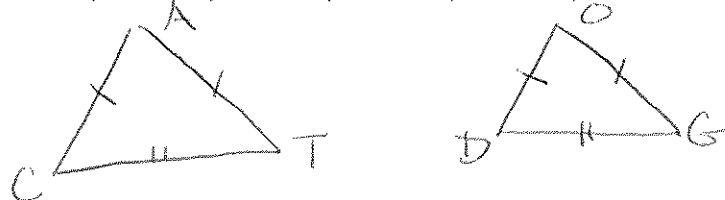
ASS -
no guarantee
of congruence.

(b) $CA = 5, DO = 5, \angle A \cong \angle O, \angle C \cong \angle D$



ASA
 $\triangle CAT \cong \triangle DOG$

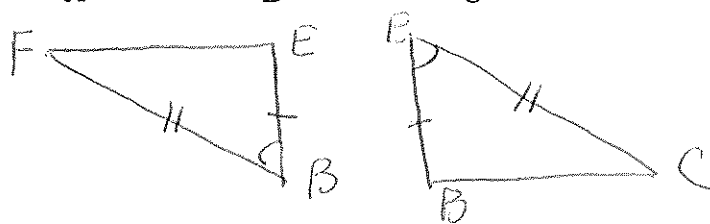
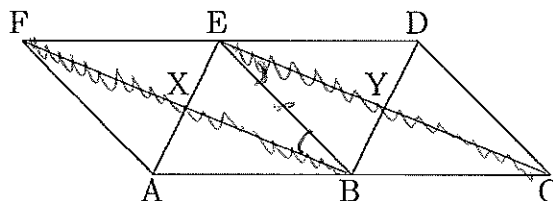
(c) $CA = 5, AT = 5, CT = 4, DO = 5, DG = 4, OG = 5$



SSS
 $\triangle CAT \cong \triangle DOG$

4. [16 pts - 8 each] In each diagram, apply the given information to find a pair of congruent triangles. Use correct notation to tell which two triangles they are and specify the acronym you use, then thoroughly explain how you arrived at your conclusion.

- (a) Assume only that segments \overline{FB} and \overline{EC} are parallel and congruent to each other.



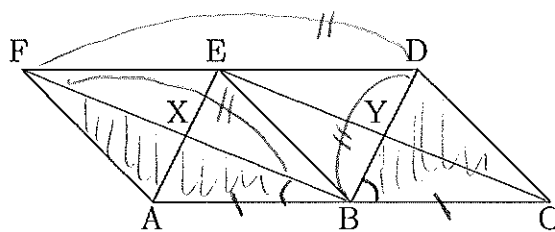
$\triangle BEF \cong \triangle ECB$
① by SAS

①(s) $\overline{FB} \cong \overline{EC}$ is given

③(A) $\angle FBE \cong \angle ECB$ because they're alternate interior angles.

②(s) $\overline{EB} \cong \overline{EB}$ It's shared.

- (b) Assume only that B is the midpoint of \overline{AC} , that $\angle FBA \cong \angle DBC$, and that $\triangle FDB$ is equilateral.



① $\triangle ABF \cong \triangle CBD$
① by SAS

② (S) $\overline{AB} \cong \overline{BC}$ because B is \overline{AC} 's midpoint

① (A) $\angle ABF \cong \angle CBD$ is given

③ (S) $\overline{BF} \cong \overline{BD}$ because $\triangle FDB$ is equilateral.

5. [12 pts] A green figure and a blue figure are mathematically similar. The area of the green figure is 19.8 cm^2 , and the area of the blue figure is 120.5 cm^2 . If the blue figure has a perimeter of 35.6 cm , what is the perimeter of the green figure, to the nearest tenth? Show clear work.

⑥ no s.f.
④ wrote s.f.
but didn't use.

Green
area = 19.8 cm^2
perim = ?
"new"

Blue
area = 120.5 cm^2
perim = 35.6 cm
"old"

$\frac{\text{new length}}{\text{old length}} = \text{s.f.}$

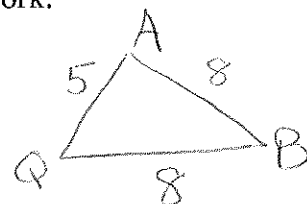
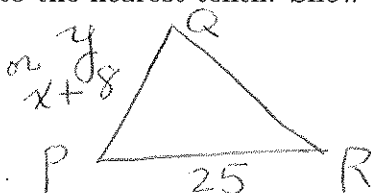
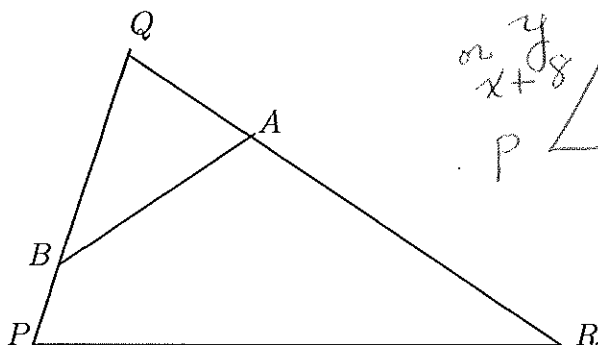
$\frac{x}{35.6} = .405$

$x = 14.4 \text{ cm}$

$\frac{\text{new area}}{\text{old area}} = (\text{s.f.})^2$
 $.1643 = \frac{19.8}{120.5} = (\text{s.f.})^2$

$\text{s.f.} = \sqrt{.1643} = .405$

6. [12 pts] In the diagram, $\triangle PQR \sim \triangle QAB$. Also, $BQ = 8$, $QA = 5$, $AB = 8$, and $PR = 25$. Find the length of \overline{PB} , to the nearest tenth. Show clear work.



$\frac{x+8}{5} = \frac{25}{8}$

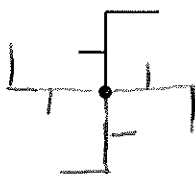
$125 = 8x + 64$
 $61 = 8x$

$\frac{y}{5} = \frac{25}{8}$

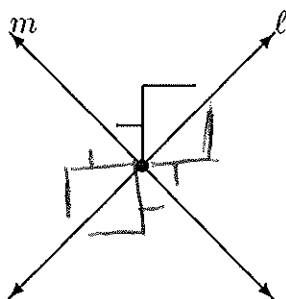
$8y = 125$
 $y = 15.6$
 $0 - 8 \rightarrow$

$7.6 = x$

7. (a) [4 pts] Complete the drawing so that a 90° rotation around the marked point will demonstrate symmetry.

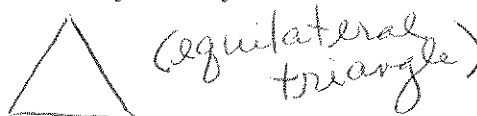


- (b) [4 pts] Now complete the drawing so that lines ℓ and m are lines of symmetry.

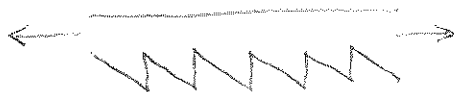


8. [8 pts - 4 each] Draw examples of the following.

- (a) A figure that has 120° rotational symmetry and also reflectional symmetry



- (b) A figure that has translational symmetry but not reflectional symmetry



9. [6 pts - 2 each] Consider a pyramid with this base:



- (a) How many axes of symmetry does the pyramid have? *none*

- (b) How many longitudinal planes of symmetry does the pyramid have? *1*

- (c) How many lateral planes of symmetry does the pyramid have? *none*

10. (a) [2 pts] How many lateral axes of symmetry does a circular cylinder have? *infinitely many*

- (b) [2 pts] How many longitudinal axes of symmetry does a regular hexagonal prism have? *1*

