Name_____

2nd hour	3rd hour	4th hour
5th hour	6th hour	7th hour

Table 1	Table 3	Table 5	Table 7
Table 2	Table 4	Table 6	Table 8

Similar Triangles

| Objective 1 I can show that a pair of triangles are similar (or not similar) based on a variety of figures		Objective 2: I can correctly state the similarity statement of two similar triangles		Objective 3: I can state why two triangles are similar based on a given figure		Objective 4: I can use the proportionality implied by a pair of similar triangles to determine missing side lengths, variable values, and scale factors	
I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet

A) similar: SSS similarity
B) similar: SAS similarity
C) similar; AA similarity *(circled)*
D) not similar

If the triangles are similar, then complete this statement

$\Delta JEF \sim \Delta$ __JLK__

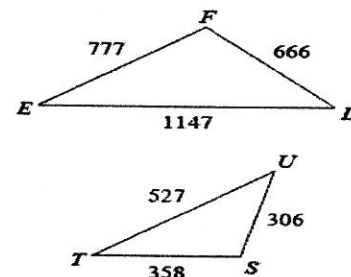If these triangles are NOT similar, then BRIEFLY explain WHY NOT.
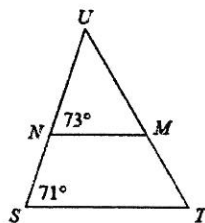
A) not similar *(circled)*
B) similar: SSS similarity
C) similar; AA similarity
D) similar; SAS similarity

If the triangles are similar, then complete this statement

$\Delta UNM \sim \Delta$ _____

If these triangles are NOT similar, then BRIEFLY explain WHY NOT.

$\angle 73 \neq \angle 71$

A) similar: SAS similarity
B) similar; AA similarity
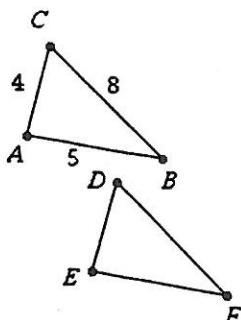C) not similar
D) similar: SSS similarity

If the triangles are similar, then complete this statement

$\Delta UTS \sim \Delta$ _____

If these triangles are NOT similar, then BRIEFLY explain WHY NOT.

$\frac{777}{358} \neq \frac{666}{306}$

sides not prop

This figure is NOT drawn to scale!
We know that $\Delta ABC \sim \Delta EDF$ and we know that the scale factor from ΔABC to ΔEDF is 3:1

Determine the missing lengths of the second triangle
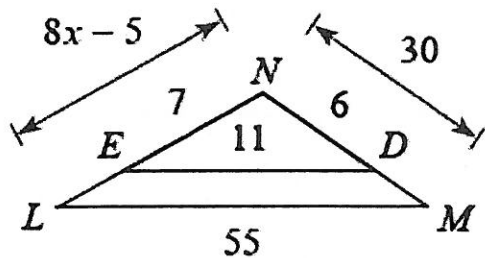
ED = __15__   EF = __12__   DF = __24__

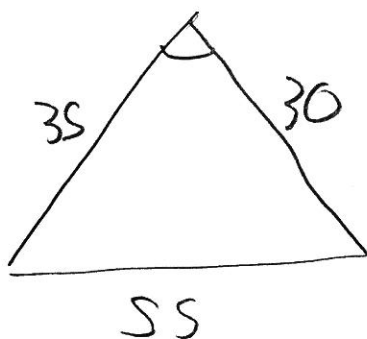$\frac{ED}{AB} = \frac{3}{1}$ $\frac{EF}{AC} = \frac{3}{1}$ $\frac{DF}{CB} = \frac{3}{1}$

These triangles are KNOWN to be similar to each other

$8x - 5$

30

N

7 6

E 11 D

L 55 M

Complete the similarity statement $\Delta NML \sim \Delta$ __NDE__

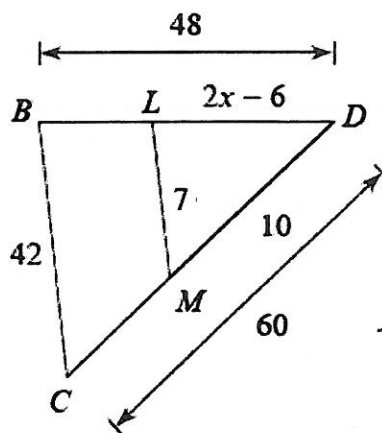Determine the value of x (show your work)

7 6

11

35 30

55

X = __5__

$35 = 8x - 5$

$40 = 8x$

$\dfrac{40}{8} = \dfrac{8x}{8}$

$5 = x$

These triangles are KNOWN to be similar to each other

48

B L $2x - 6$ D

7

42 10

M

60

C

$\dfrac{42}{7} = \dfrac{new}{old}$

Complete the similarity statement $\Delta LMD \sim \Delta$ __BCD__

State the scale factor from the small triangle to the large triangle (use at least two of the three notations)

$42 : 7$	$\dfrac{42}{7}$	$42 \text{ to } 7$
$6 : 1$	$\dfrac{6}{1}$	$6 \text{ to } 1$

Determine the value of x (show your work)

$\dfrac{8}{1} = 2x - 6$
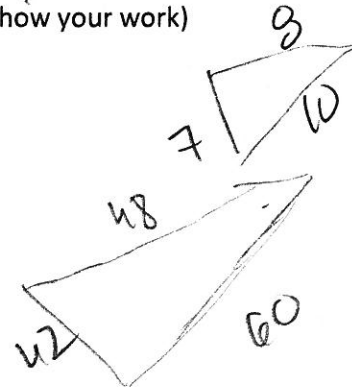
$14 = 2x$

$x = 7$

X = ____

8

7 10

48

42 60

You are informed that these triangles are similar

Your math teacher informs you that this is a trick question as it stands now, and then makes the claim that the value of x could be two different values and still maintain the properties of similar triangles

WITHOUT finding the value(s) of x, briefly explain why your mathematics teacher made that claim.

S

R

120 $17x - 4$

T

50 55

D E
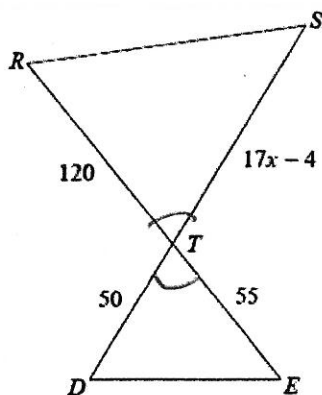
$120 \sim 17x - 4$ $50 \sim 17x - 4$

one triangle   one triangle

Name_____

2nd hour	3rd hour	4th hour
5th hour	6th hour	7th hour

| Table 1	Table 3	Table 5	Table 7
Table 2	Table 4	Table 6	Table 8

Similar Triangles

Objective 1 I can show that a pair of triangles are similar (or not similar) based on a variety of figures		Objective 2: I can correctly state the similarity statement of two similar triangles		Objective 3: I can state why two triangles are similar based on a given figure		Objective 4: I can use the proportionality implied by a pair of similar triangles to determine missing side lengths, variable values, and scale factors	
I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet

1034 P, Q, 1598, 2115, R

T, 945, 462, P, 714, U

If the triangles are similar, then complete this statement

$\Delta QPR \sim \Delta$__TPU__

If these triangles are NOT similar, then BRIEFLY explain WHY NOT.
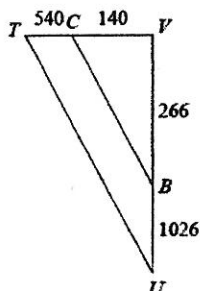
540 C 140, T, V, 266, B, 1026, U
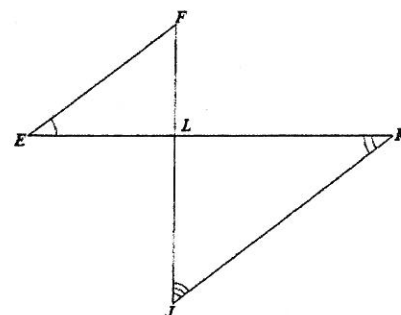
A) similar; SSS similarity
B) similar; SAS similarity
C) similar; AA similarity
D) not similar

If the triangles are similar, then complete this statement

$\Delta VTU \sim \Delta$_____

If these triangles are NOT similar, then BRIEFLY explain WHY NOT.

$\dfrac{TV}{CV} \neq \dfrac{VU}{VB}$ Sides not proportional

F, E, L, K, J

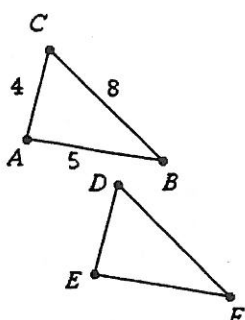If the triangles are similar, then complete this statement

$\Delta LEF \sim \Delta$_____

If these triangles are NOT similar, then BRIEFLY explain WHY NOT.

∠'s not ≅
Δ's not ~

C, 4, 8, A, 5, B, D, E, F

This figure is NOT drawn to scale!
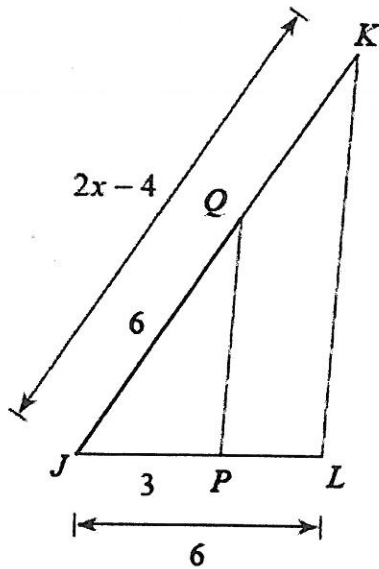We know that $\Delta ABC \sim \Delta DFE$ and we know that the scale factor from ΔABC to ΔDFE is 1:4

Determine the missing lengths of the second triangle

ED = $\dfrac{5}{4}$

EF = 2

$\dfrac{?}{DE} = $_____ ①

These triangles are KNOWN to be similar to each other

$2x - 4$

Q

6

K

J 3 P L

6

Complete the similarity statement $\Delta QPJ \sim \Delta$ __KLJ__

Determine the value of x (show your work)

X = __8__

These triangles are KNOWN to be similar to each other
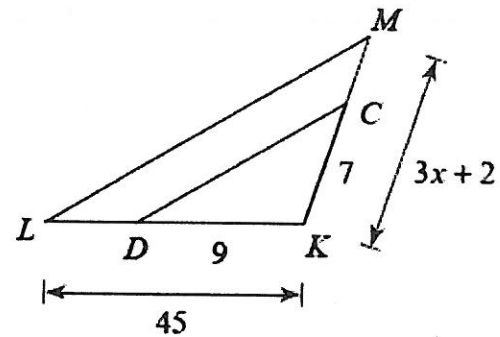
M

C

7 $3x + 2$

L D 9 K

45

ΔLMK

Complete the similarity statement   ~~ΔL~~MD ~ Δ____

State the scale factor from the small triangle to the large triangle (use at least two of the three notations)

5 to 1	5 : 1	$\frac{5}{1}$

Determine the value of x (show your work)

X = __11__

You are informed that these triangles are similar

R S

120 $17x - 4$

T

50 55

D E
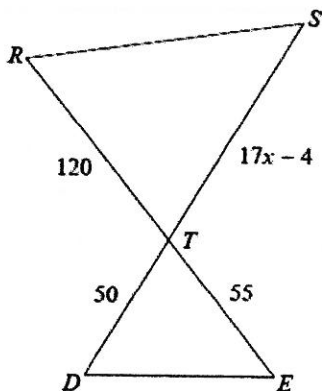
Your math teacher informs you that this is a trick question as it stands now, and then makes the claim that the value of x could be two different values and still maintain the properties of similar triangles

WITHOUT finding the value(s) of x, briefly explain why your mathematics teacher made that claim.

$$\frac{RT}{TD} = \frac{ST}{TE}$$ | $$\frac{RT}{TE} = \frac{ST}{TD}$$

Δ1   Δ2

Name_____

2nd hour	3rd hour	4th hour
5th hour	6th hour	7th hour

Table 1	Table 3	Table 5	Table 7
Table 2	Table 4	Table 6	Table 8

Similar Triangles

Objective 1 I can show that a pair of triangles are similar (or not similar) based on a variety of figures		Objective 2: I can correctly state the similarity statement of two similar triangles		Objective 3: I can state why two triangles are similar based on a given figure		Objective 4: I can use the proportionality implied by a pair of similar triangles to determine missing side lengths, variable values, and scale factors	
I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet	I can explain how to do this to someone else	Not yet

$\cong \angle's$

AATM.

If the triangles are similar, then complete this statement

$\Delta TUK \sim \Delta$ __LMK__

If these triangles are NOT similar, then BRIEFLY explain WHY NOT.
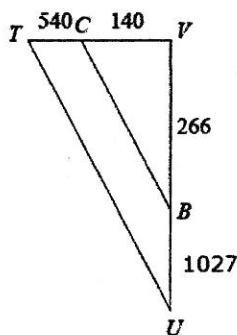
A) similar; SSS similarity
B) similar; SAS similarity
C) similar; AA similarity
(D) not similar

If the triangles are similar, then complete this statement

$\Delta VTU \sim \Delta$ _____

If these triangles are NOT similar, then BRIEFLY explain WHY NOT.

sides not proportional
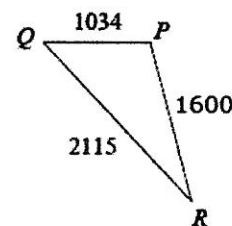
If the triangles are similar, then complete this statement

$\Delta QPR \sim \Delta$ _____

If these triangles are NOT similar, then BRIEFLY explain WHY NOT.

sides not proportional so Δ's not ~
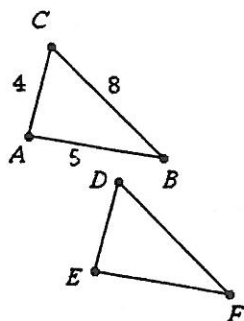
This figure is NOT drawn to scale!
We know that $\Delta ABC \sim \Delta FDE$ and we know that the scale factor from ΔABC to ΔFDE is 10:1

Determine the missing lengths of the second triangle

ED = __80__   EF = __50__ $\frac{?}{DF}$ = __40__

These triangles are KNOWN to be similar to each other

$2x - 4$

Q

12

J 4 P L

8
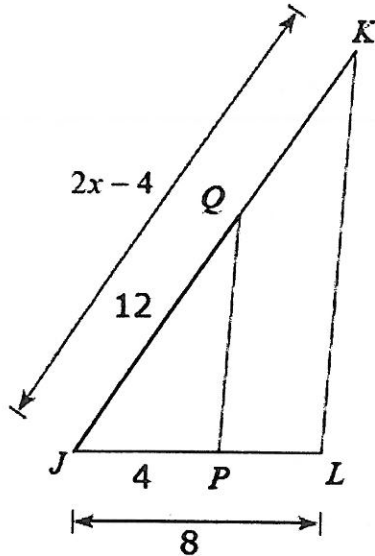
Complete the similarity statement $\Delta QPJ \sim \Delta$ __K L J__

Determine the value of x (show your work)

X = __14__

These triangles are KNOWN to be similar to each other

M

C

7 $3x + 2$

L D 10 K

50

$\Delta LMK \sim \Delta DCK$
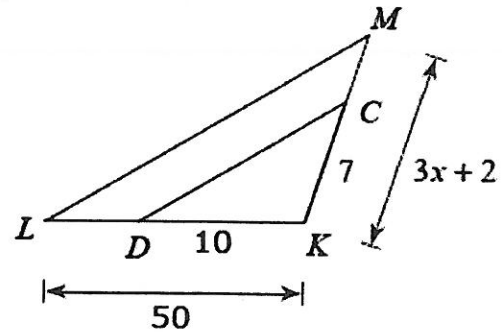
Complete the similarity statement $\Delta LMD \sim \Delta$ ____

State the scale factor from the large triangle to the small triangle (use at least two of the three notations)

$10:5$	$\dfrac{1}{5}$	$1 to 5$

Determine the value of x (show your work)

X = __11__

R S

120 $17x - 4$

T

50 55

D E

You are informed that these triangles are similar
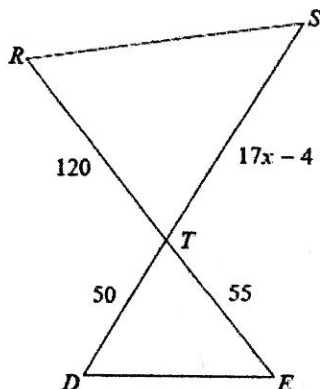
Your math teacher informs you that this is a trick question as it stands now, and then makes the claim that the value of x could be two different values and still maintain the properties of similar triangles

WITHOUT finding the value(s) of x, briefly explain why your mathematics teacher made that claim.

$$\frac{120}{55} = \frac{17x-4}{50} \quad OR \quad \frac{120}{50} = \frac{17x-4}{55}$$

VERSION Ⓐ

AA ~ theorem

$\triangle JEF \sim \triangle JLK$

$\triangle JEF \sim \triangle JLK$
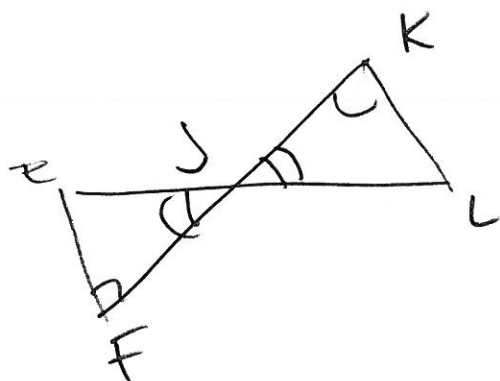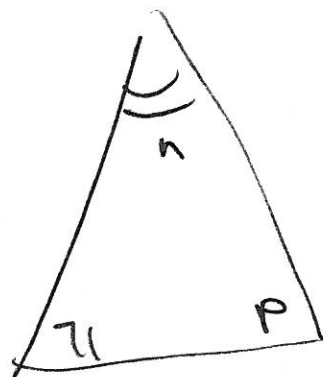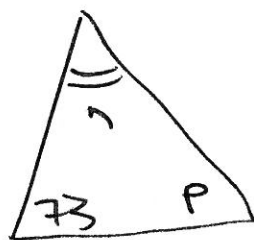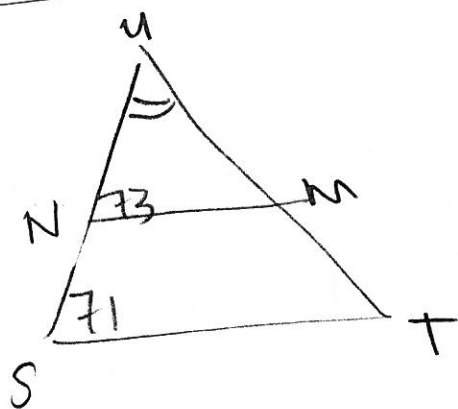
Since 107 ≠ 109
not ≅ ∠'s

$180 = 73 + n + p$
$-73 \quad -73$
$107 = n + p$

$180 = 71 + n + p$
$-71 \quad -71$
$109 = n + p$

triangles NOT Similar

∠'s not ≅

Triangle 1: 777, 666, 1147

Triangle 2: 358, 306, 527
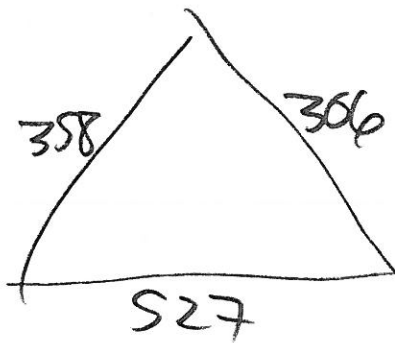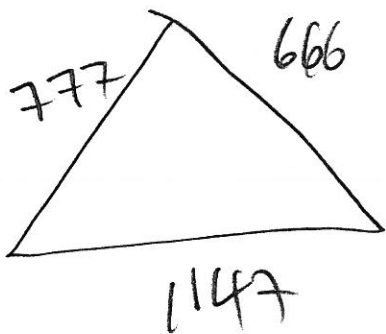
$$\frac{777}{358} \qquad \frac{666}{306} \qquad \frac{1147}{527}$$

$$2.1704 \neq 2.1765$$

$\triangle$'s not $\sim$ sides not proportional

Triangle ABC: B, 4, 8, A, 5, C

Triangle DEF: D, 12, 24, E, 15, F
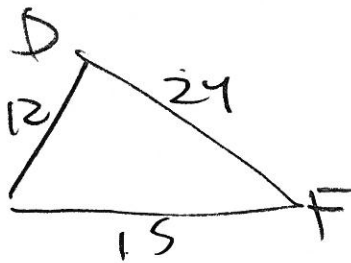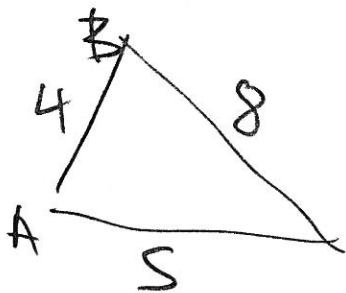
$$\frac{new}{old} = \frac{\triangle EDF}{\triangle ABC}$$

$$\frac{ED}{AB} = \frac{3}{1} \rightarrow \frac{ED}{4} = \frac{3}{1} \qquad ED = 12$$

$$\frac{DF}{BC} = \frac{3}{1} \rightarrow \frac{DF}{8} = \frac{3}{1} \qquad DF = 24$$

$$\frac{EF}{AC} = \frac{3}{1} \rightarrow \frac{EF}{5} = \frac{3}{1} \qquad EF = 15$$
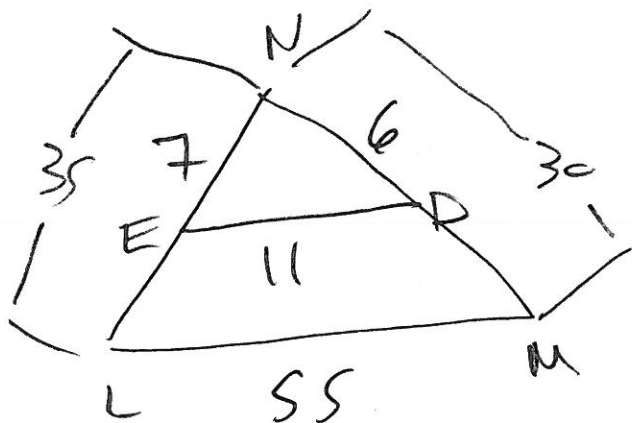
$$35 = 8x - 5$$
$$40 = 8x$$
$$\frac{40}{8} = x$$
$$\boxed{x = 5}$$

$\triangle NML \sim \triangle NDE$
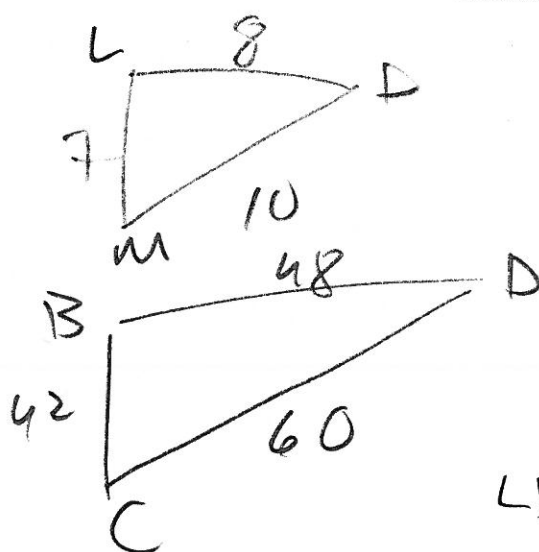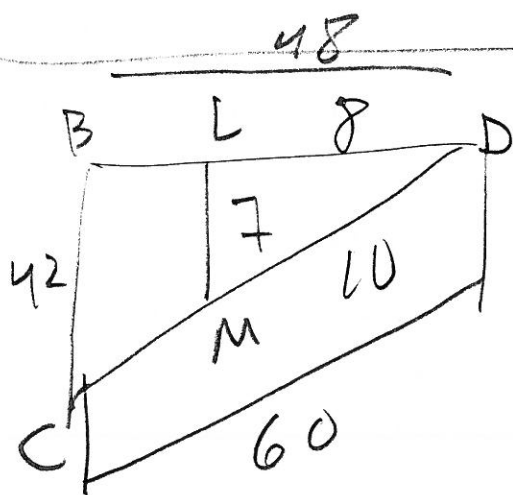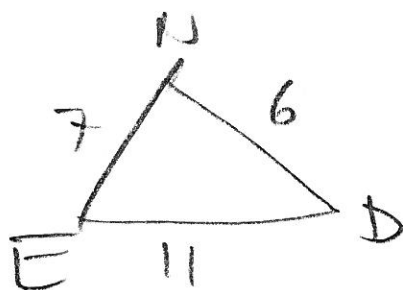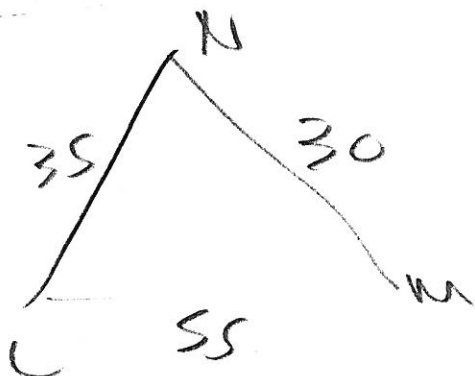
$\triangle LMD \sim \triangle BCD$

$$\frac{\triangle BCD}{\triangle LMD} = \frac{48}{8} = \frac{60}{10} = \frac{42}{7} = \frac{6}{7}$$

$6 \div 1 \qquad 6:1 \qquad \frac{6}{1}$

$LD = 2x - 6$
$LD = 8$
$2x - 6 = 8$
$2x = 14$
$\boxed{x = 7}$

R   S

120

17X-4

SO   T   SS

D   E

Version ①

△RTS ~ △ETD

$$\frac{120}{SS} = \frac{17X-4}{SO}$$

Version ②

△RTS ~ △DTE

$$\frac{120}{SO} = \frac{17X-4}{SS}$$

Version B

Q 1034 P   T 462 P
      2115   714
          1598   945
    R   U
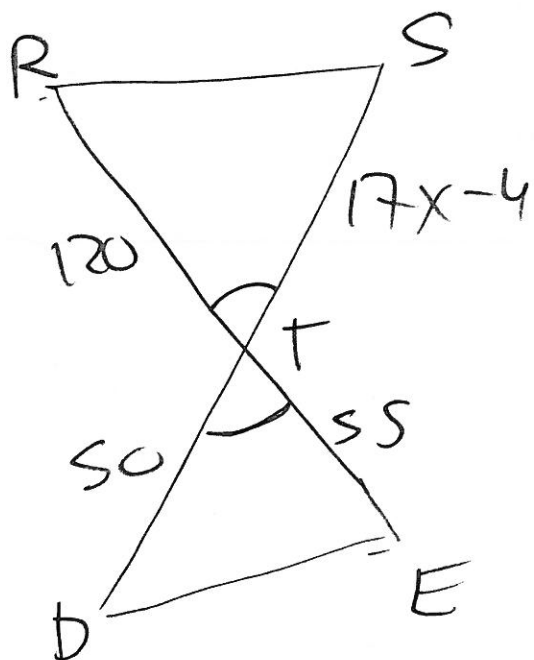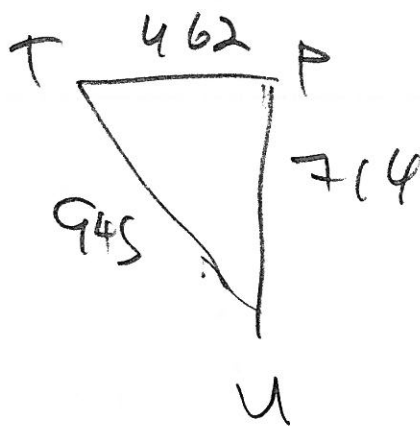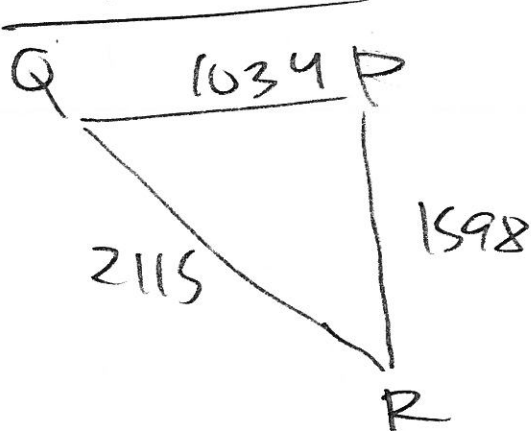
$$\frac{1034}{462} \ ? \ \frac{1598}{714} \ ? \ \frac{2115}{945}$$

$$\frac{47}{21} = \frac{47}{21} = \frac{47}{21}$$

sides proportional $\longrightarrow$ $\triangle \underset{SSS}{\sim}$

$\triangle QPR \sim \triangle TPU$
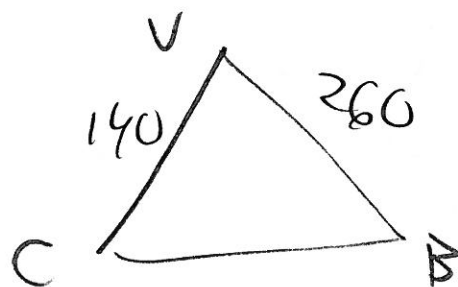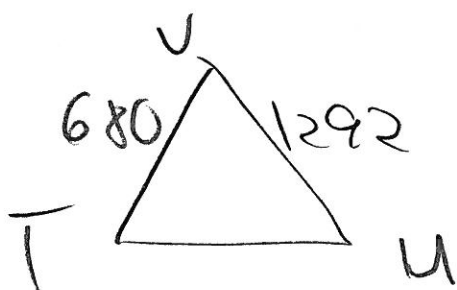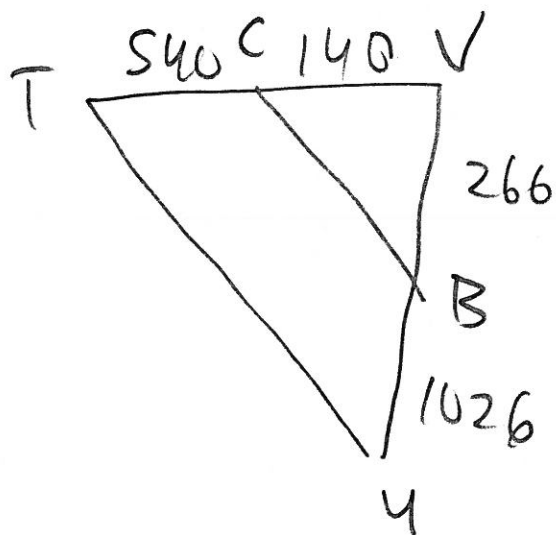
$$\frac{680}{140} \ ? \ \frac{1292}{260}$$

$$\frac{34}{7} \neq \frac{323}{65}$$

Sides not ~/or proportional

Δ's not similar

K

12

Θ

6

J

3 P

L

6

K

12

J

6 L

Q

6

J 3 P
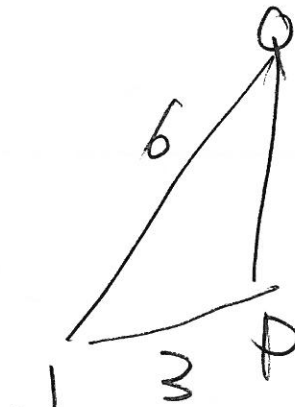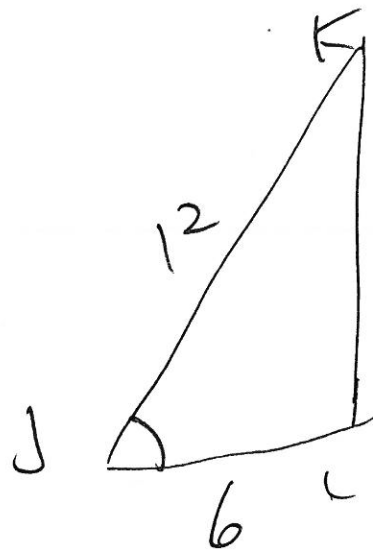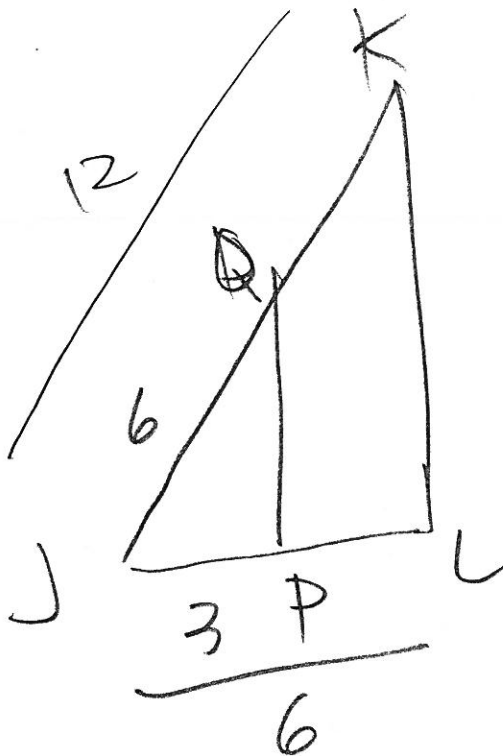
$JK = 2x - 4$

$12 = 2x - 4$

$16 = 2x$

$x = 8$

$\triangle QPJ \sim \triangle KLJ$

M

L

D   9   K

3S

C

7

45
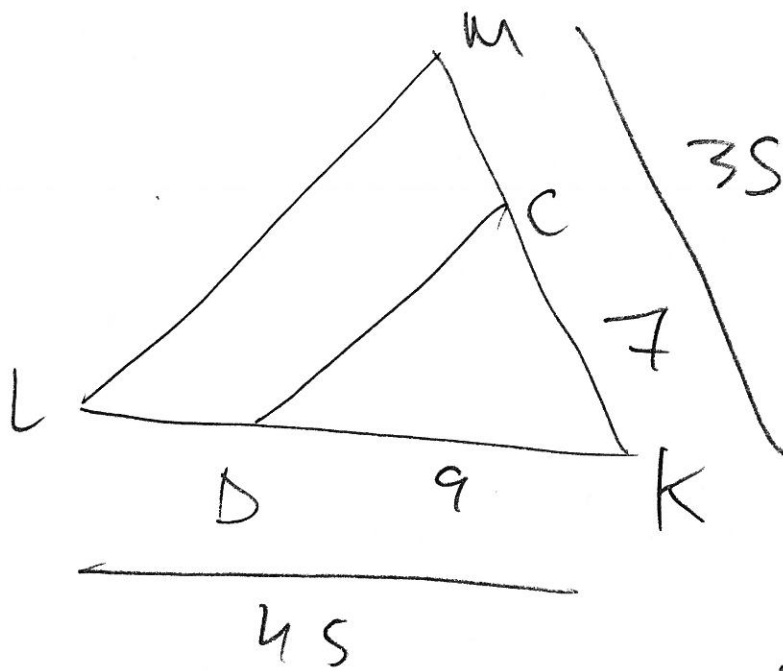
ΔLMD type

ΔLMK ~ Δ DCK

MK = 3S

3S = 3x + 2

33 = 3x

x = 11

M

L

45

K

3S

C

7

D   9   K
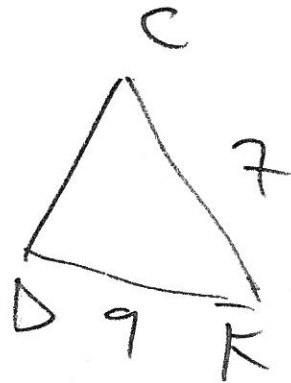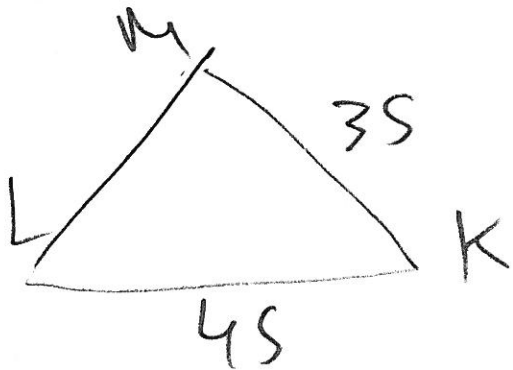
$$\frac{large}{small} = \frac{45}{9} = \frac{3S}{7} = \frac{S}{1}$$

5 to 1   5:1 $\frac{5}{1}$
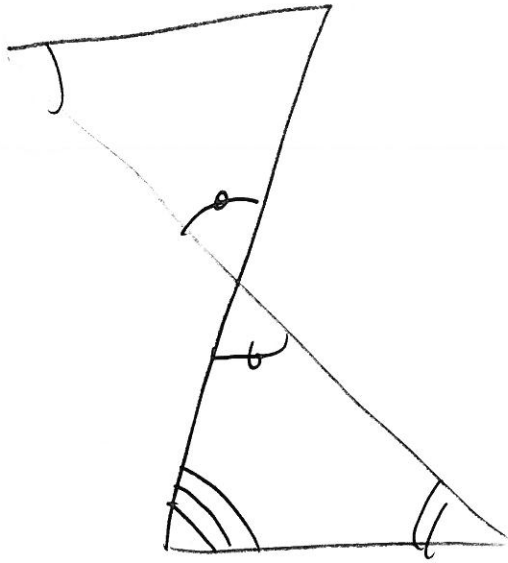
△ not ~
because
∠s not ≅
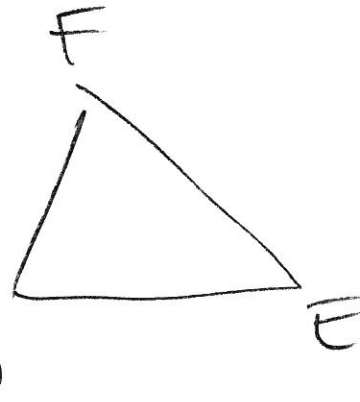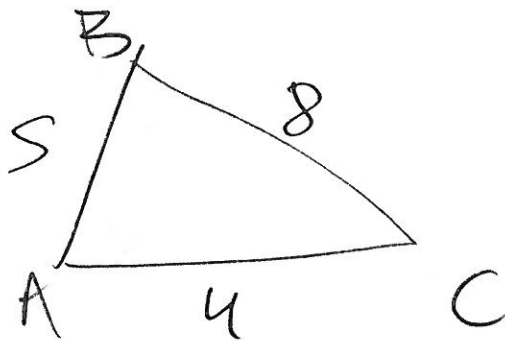
$$\frac{new}{odd} = \frac{\triangle DEF}{\triangle ABC} = \frac{1}{4}$$

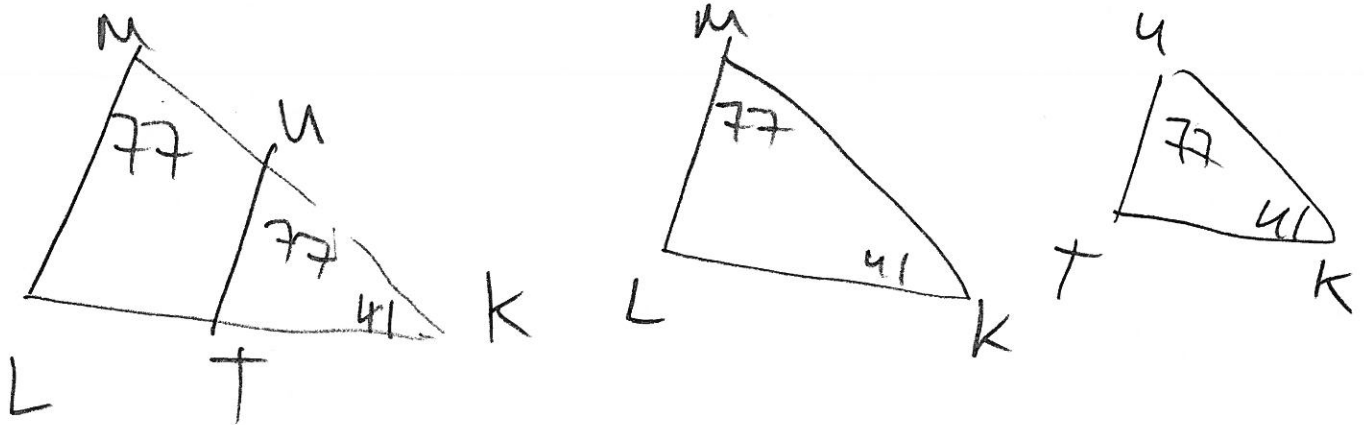$$\frac{DF}{AB} = \frac{1}{4} \rightarrow \qquad \frac{DF}{5} = \frac{1}{4} \rightarrow DF = \boxed{\frac{5}{4}}$$

$$\frac{FE}{BC} = \frac{1}{4} \rightarrow \qquad \frac{FE}{8} = \frac{1}{4} \rightarrow FE = \frac{8}{4} = \boxed{2}$$
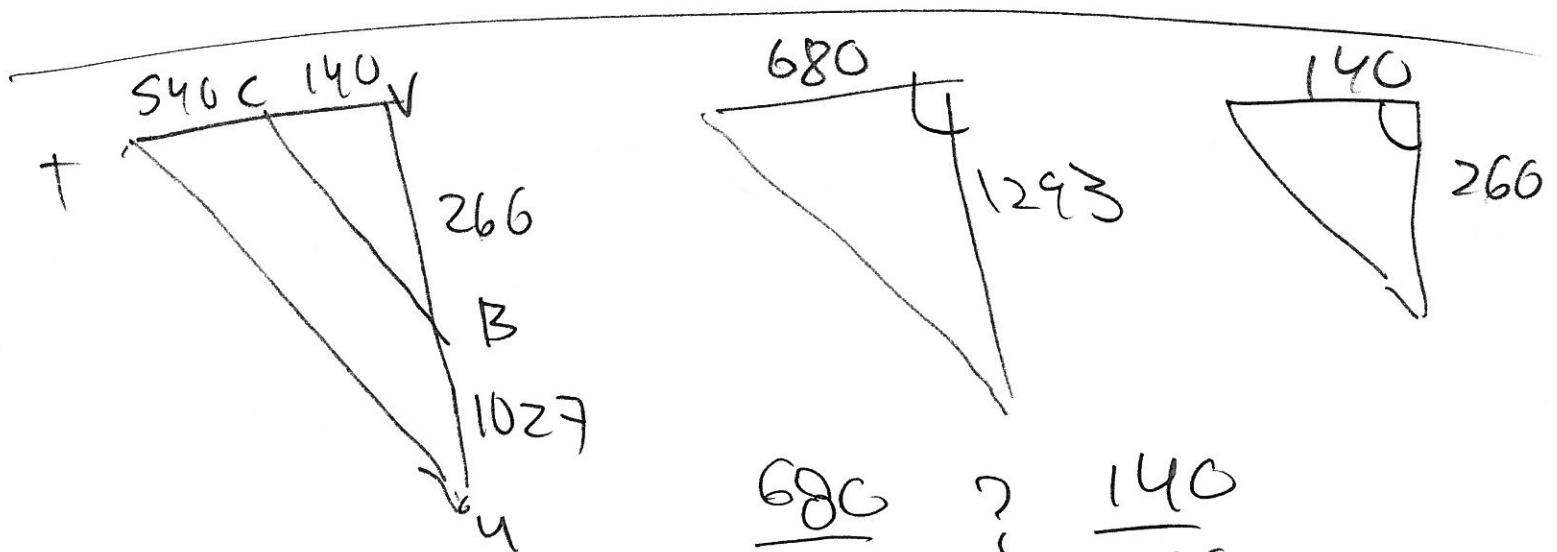
$$\frac{DE}{AC} = \frac{1}{4} \rightarrow \qquad \frac{DE}{4} = \frac{1}{4} \rightarrow DE = \boxed{1}$$
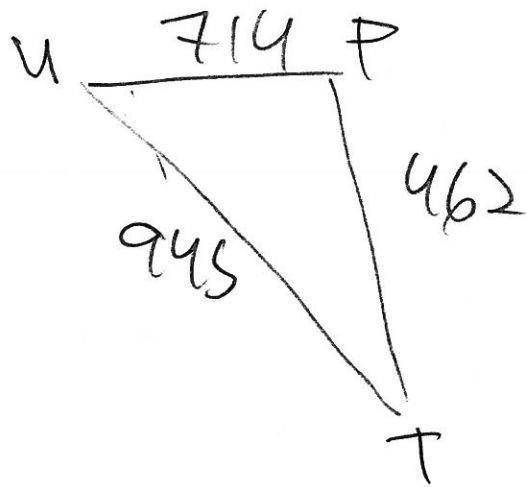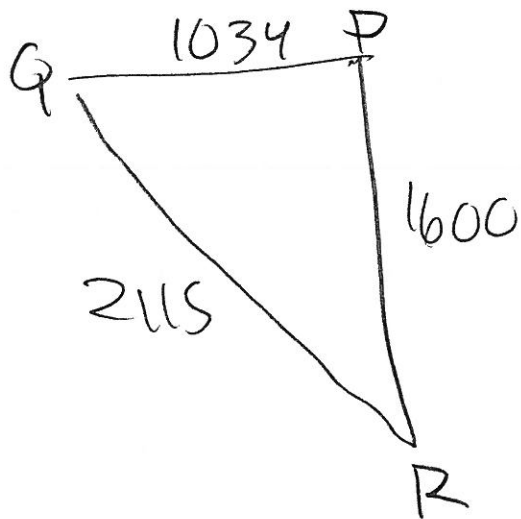
VERSION Ⓒ

$\triangle TUK \sim \triangle LMK$ AA~theorem

$$\frac{680}{1293} \; ? \; \frac{140}{260}$$

$$\frac{680}{1293} \neq \frac{7}{13}$$

∠'s not ≅ → sides not proportional

SAS Fails

Q ―――1034――― P   U ――― 714 ――― P

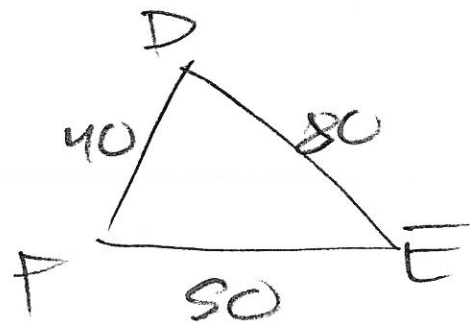2115   1600   945   462
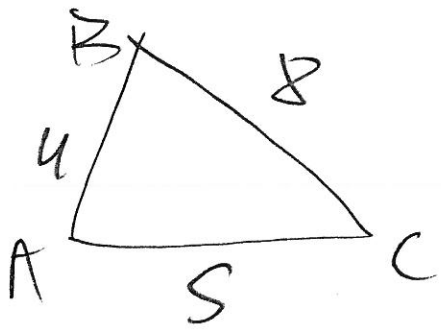
R   T

$$\frac{2115}{945} \; ? \; \frac{1034}{714} \; ? \; \frac{1600}{462}$$

$$\frac{47}{21} \neq \frac{517}{357} \neq \frac{800}{231}$$

sides not proportional
so △'s not ~

$$\frac{\triangle FDE}{\triangle ABC} = \frac{10}{1}$$

$$\frac{FD}{AB} = \frac{10}{1} \longrightarrow \frac{FD}{4} = \frac{10}{1} \qquad \boxed{FD = 40}$$
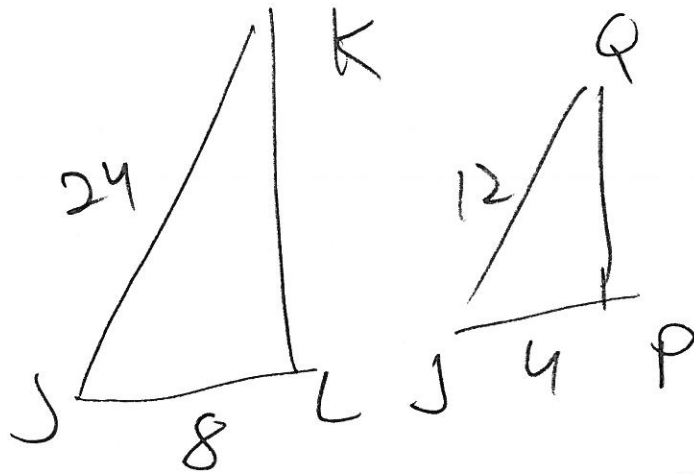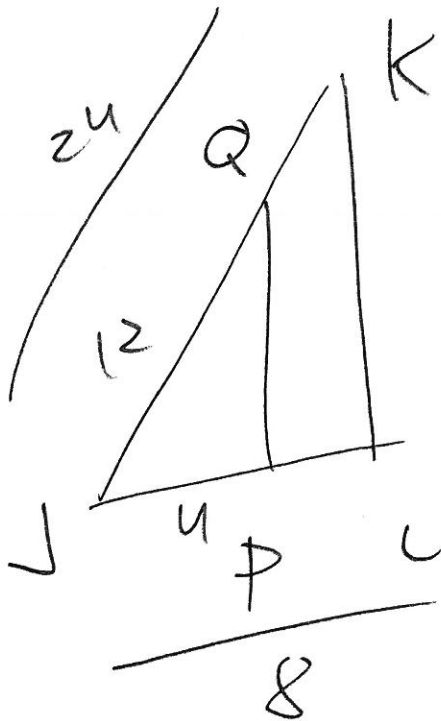
$$\frac{DE}{BC} = \frac{10}{1} \longrightarrow \frac{DE}{8} = \frac{10}{1} \qquad \boxed{DE = 80}$$

$$\frac{FE}{AC} = \frac{10}{1} \longrightarrow \frac{FE}{5} = \frac{10}{1} \qquad \boxed{FE = 50}$$

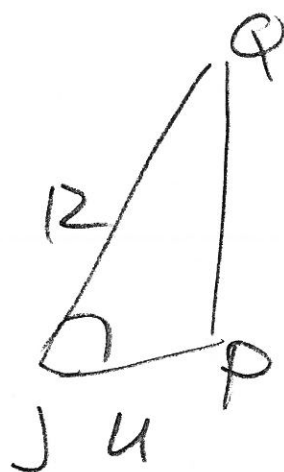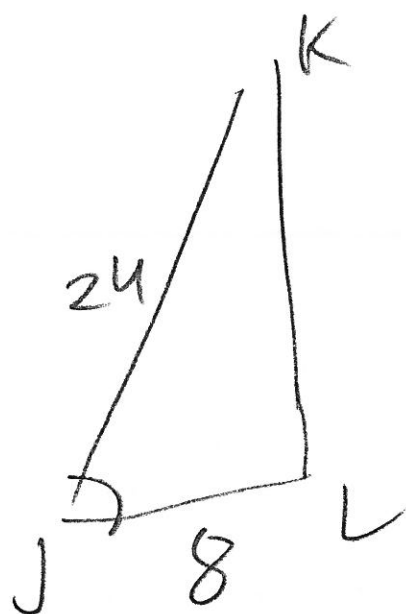24 Q K

12

J 4 P L

8

24 K   12 Q

J 8 L   J 4 P

$$\triangle QPJ \sim \triangle KLJ$$
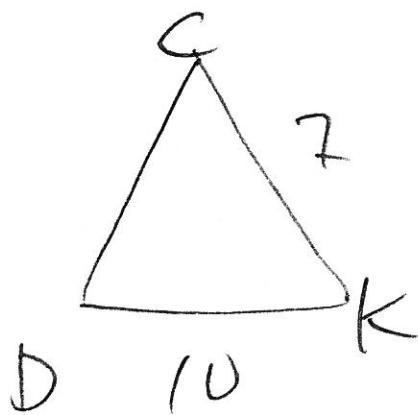
$24 = JK$

$24 = 2x - 4$

$28 = 2x$

$x = 14$

First triangle (left):
K, Q, L, J, P
24
12
4 P
8

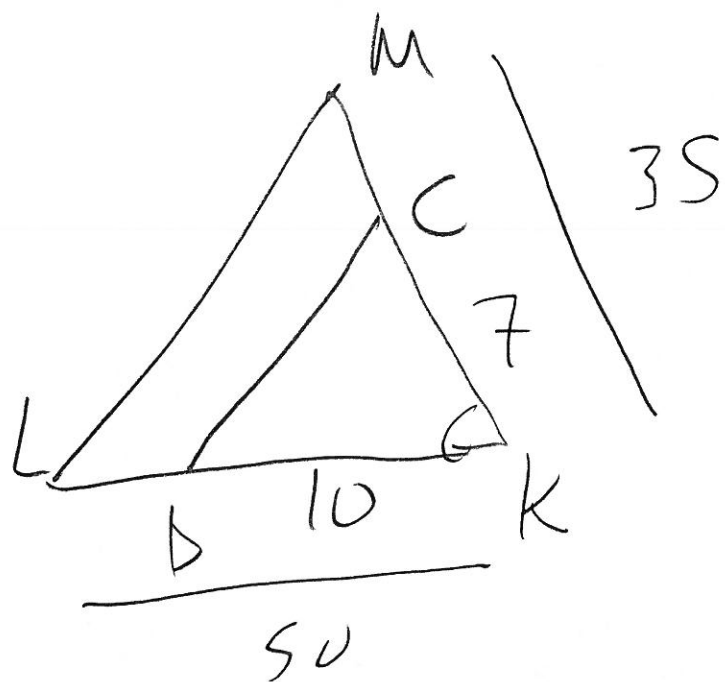Second triangle (middle):
K, L, J
24
8

Third triangle (right):
Q, P, J
12
4
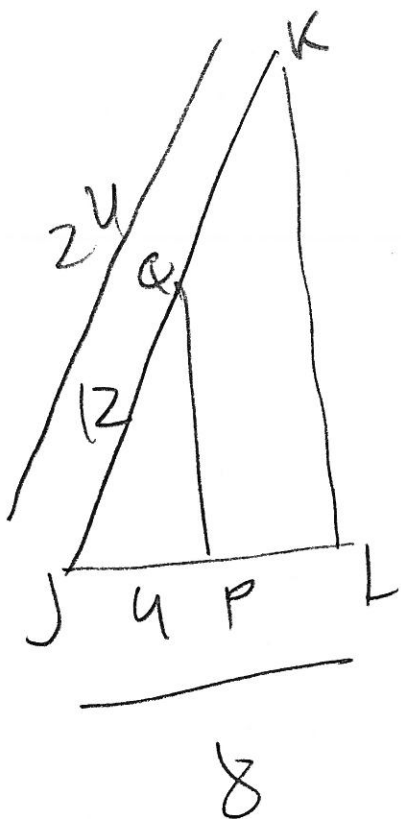
$$\triangle QPJ \sim \triangle KLJ$$

$JK = 24$

$24 = 2x - 4$

$28 = 2x$

$\boxed{x = 14}$

$$\triangle LMK \sim \triangle DCK$$

$$MK = 35$$
$$35 = 3x + 2$$
$$33 = 3x$$
$$\boxed{x = 11}$$

$$\frac{new}{old} = \frac{\triangle DCK}{\triangle LMK} \Rightarrow \frac{DC}{LM} = \frac{CK}{MK} = \frac{DK}{LK}$$

$$\Rightarrow \frac{7}{35} = \frac{10}{50} = \frac{1}{5}$$

Scale factors

$$\boxed{\frac{1}{7} \text{ to } 1 \text{ to } 5 \quad 1 \text{ to } 5}$$