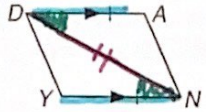
Key

Mixed Review of Congruent Triangles and Coordinate Geometry (4.3, 4.4, 4.5, 4.7)

Directions: Answer the questions below. Use the figure to help answer the questions.

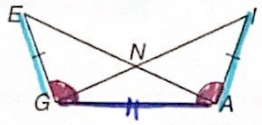
1. Which shortcut proves the triangles congruent?



SAS (Mark & list the corresponding parts used)

DA ≅ NY Given
∠ADN ≅ ∠DNY lines form ≅ alt. int ∠s
DN ≅ DN Reflexive

2. Which shortcut proves the triangles congruent?

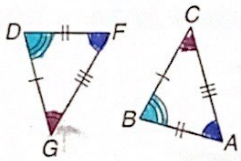


SAS (Mark & list the corresponding parts used)

GA ≅ GA Reflexive
∠EGA ≅ ∠IAG given
EG ≅ IA Given

3. If $\triangle TGS \cong \triangle KEL$, which angle in $\triangle KEL$ corresponds to $\angle T$? ∠K

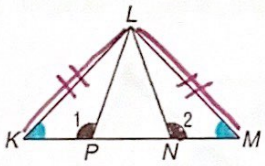
4. Identify the congruent triangles and name their corresponding congruent angles.



Congruent Triangles: △ABC ≅ △FDG

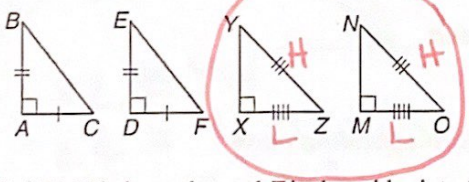
Congruent Angles: ∠A ≅ ∠F ∠C ≅ ∠G ∠D ≅ ∠B

5. $\triangle KLM$ is an isosceles triangle and $\angle 1 \cong \angle 2$. Name the shortcut that could be used to prove $\triangle LKP \cong \triangle LMN$. Choose from SSS, SAS, ASA, and AAS. (Be sure to mark & list the corresponding parts used for the shortcut)

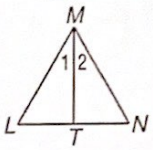


∠2 ≅ ∠1 given
∠K ≅ ∠M base ∠s of isosc. △ are ≅
KL ≅ ML def of isosceles △

6. Without finding any other angles or sides congruent, circle the pair of triangles can be proved to be congruent by the HL Theorem.

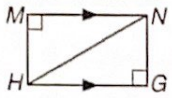


7. If $\triangle LMN$ is isosceles and T is the midpoint of LN, which shortcut can be used to prove $\triangle MLT \cong \triangle MNT$? (Be sure to mark & list the corresponding parts used for the shortcut)

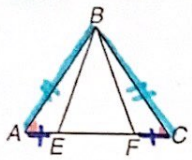


SSS or SAS

8. Which triangles are congruent in the figure below? (Write out the congruence statement) $\triangle MNH \cong \triangle GHN$

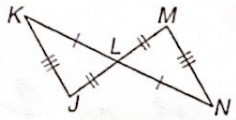


9. If $\triangle ABC$ is isosceles and $AE \cong FC$, which shortcut can be used to prove $\triangle AEB \cong \triangle CFB$? (Be sure to mark & list the corresponding parts used for the shortcut)



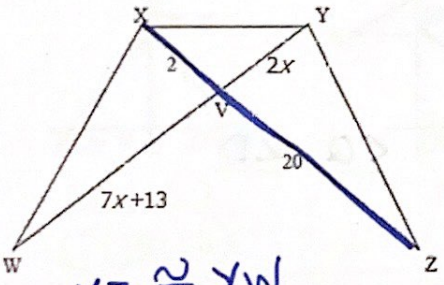
$AE \cong CF$ Given
$\angle A \cong \angle C$ base $\angle$s of isos. $\triangle$ are $\cong$
$AB \cong CB$ def of isos. $\triangle$

10. Which triangles are congruent in the figure? (Write out the congruent statement) $\triangle KLJ \cong \triangle NLM$



11. If $\triangle DJL \cong \triangle EGS$, which segment in $\triangle EGS$ corresponds to DL? ES

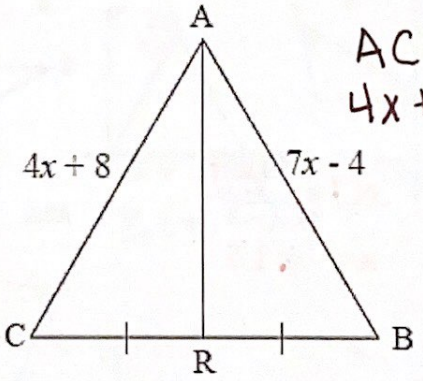
12. If $\Delta WXY \cong \Delta ZYX$, find x.



$XZ \cong YW$
$22 = 7x + 13 + 2x$
$22 = 9x + 13$
$-13 \quad -13$
$\frac{9}{9} = \frac{9x}{9}$
$1 = x$

X= 1

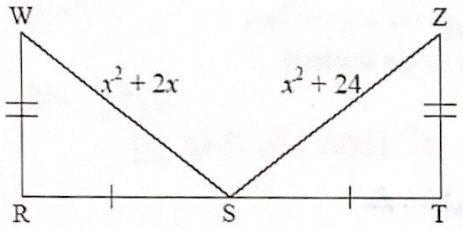
13. If $\Delta ACR \cong \Delta ABR$, find x.



$AC \cong AB$
$4x + 8 = 7x - 4$
$8 = 3x - 4$
$12 = 3x$
$4 = x$

X= 4

14. If $\Delta WRS \cong \Delta ZTS$, find the value(s) of x.



$WS \cong ZS$

$x^2 + 2x = x^2 + 24$

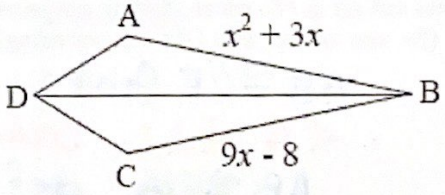
$-x^2 \quad -x^2$

$2x = 24$

$x = 12$

X= 12

15. If $\Delta ADB \cong \Delta CDB$, find the value(s) of x.



$AB \cong CB$

$x^2 + 3x = 9x - 8$

$-9x + 8 \quad -9x + 8$

$x^2 - 6x + 8 = 0$

$(x-4)(x-2) = 0$

$x = 4$ or 2

Factor! get = 0

X= 4 or 2

Check:

$4^2 + 3 \cdot 4 = 28$ ✓

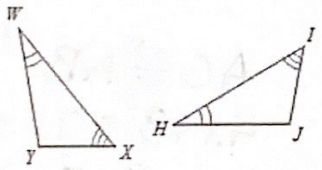
$9 \cdot 4 - 8 = 28$ ✓

$2^2 + 3 \cdot 2 = 10$ ✓

$9(2) - 8 = 10$ ✓

State what additional information is required in order to know that the triangles are congruent for the reason given. Some have multiple answers.

16) AAS

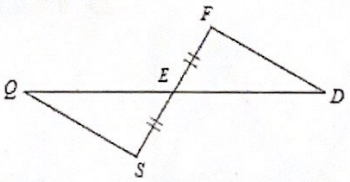


WY ≅ HJ

or

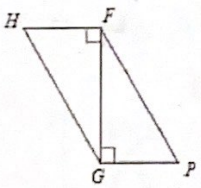
XY ≅ IJ

17) AAS



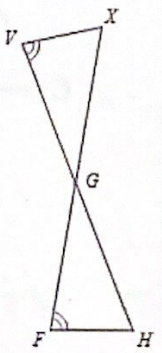
$\angle Q \cong \angle D$

18) HL



HG ≅ PF

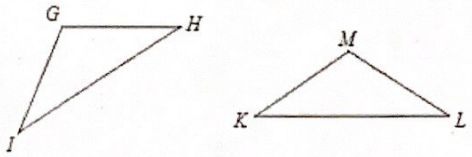
19) ASA



VG ≅ FG

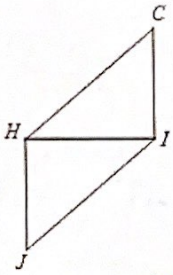
Complete each congruence statement by naming the corresponding angle or side.

20) $\triangle GHI \cong \triangle MLK$



$\overline{GH} \cong$ ML

21) $\triangle HIJ \cong \triangle IHC$



$\angle JHI \cong$ ∠CIH

22) $\triangle IJK \cong \triangle UVK$

$\overline{KI} \cong$ KU

23) $\triangle RST \cong \triangle SRG$

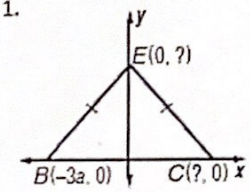
$\angle TRS \cong$ ∠GSR

Mixed Practice Continued: Practice Triangle Coordinate Geometry

Find the missing coordinates of each triangle

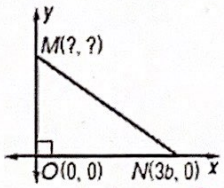
Find the missing coordinates of each triangle.

1.



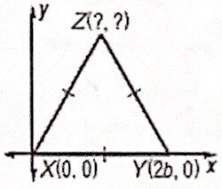
E(0,C)
C(3a,0)

2.



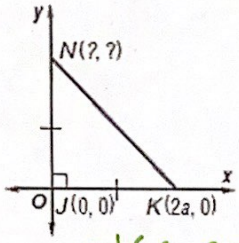
M(0,a)

3.



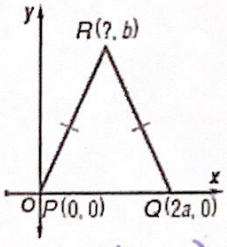
Z(b,c)

4.



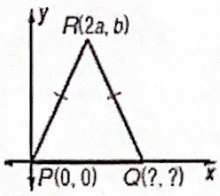
N(0,2a)

5.



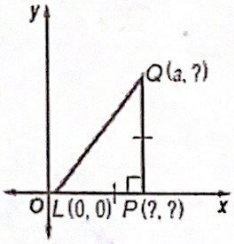
R(a,b)

6.



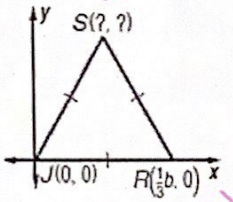
Q(4a,0)

7.



P(a,0)
Q(a,a)

8. ← $\frac{1}{2}$ of $\frac{1}{3}b$



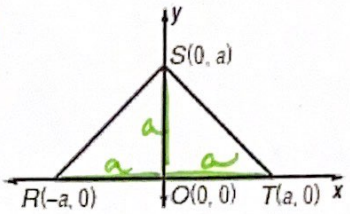
S($\frac{1}{6}b$, c)

Use the triangle to the right to answer the following questions.

9. a). Find the slope of SR and ST.

Slope SR $= \frac{a-0}{0+a} = \frac{a}{a}$ Slope SR = 1

Slope ST $= \frac{a-0}{0-a} = -\frac{a}{a} = -1$ Slope ST = -1



b). What does this tell you about triangle RST?

SR ⊥ ST so ∠RST = 90° and
ΔRST is a Right Δ

c). Find the length of SR and ST.

$SR = \sqrt{a^2+a^2} \Rightarrow \sqrt{2a^2} = SR$ → advanced solution: $a\sqrt{2} = SR$

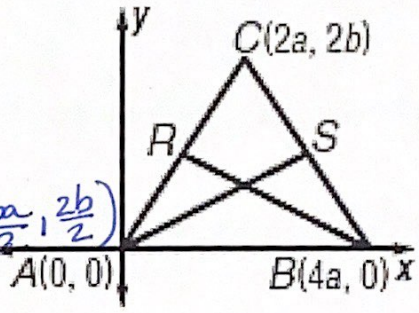
$ST = \sqrt{a^2+a^2} \Rightarrow \sqrt{2a^2} = ST$ →

d). What does this about triangle RST?

SR ≅ ST

∴ ΔRST is isosceles

10. **Given:** isosceles $\triangle ABC$ with $\overline{AC} \cong \overline{BC}$
R and *S* are midpoints of legs $\overline{AC}$ and $\overline{BC}$.



Find points S and R.

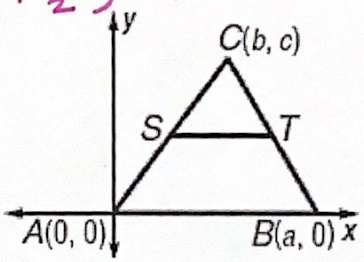
Find S: $\left(\frac{2a+4a}{2}, \frac{2b+0}{2}\right) = \left(\frac{6a}{2}, \frac{2b}{2}\right)$

S(3a, b)

Find R: $\left(\frac{2a+0}{2}, \frac{2b+0}{2}\right) = \left(\frac{2a}{2}, \frac{2b}{2}\right)$

R(a, b)

11. **Given:** $\triangle ABC$
S is the midpoint of $\overline{AC}$.
T is the midpoint of $\overline{BC}$.



S: $\left(\frac{b+0}{2}, \frac{c+0}{2}\right)$

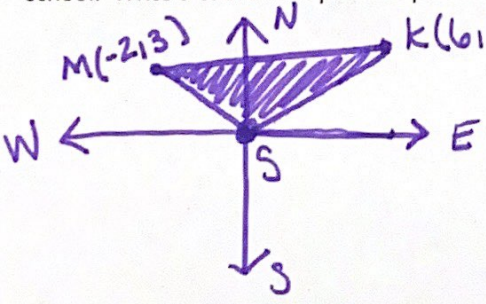
$S\left(\frac{b}{2}, \frac{c}{2}\right)$

Find S and T.

$T\left(\frac{b+a}{2}, \frac{c+0}{2}\right)$

$T\left(\frac{b+a}{2}, \frac{c}{2}\right)$

12. Katrina lives 6 miles east and 4 miles north of her high school. The mall is 2 miles west and 3 miles north of the school. Write a coordinate proof to prove that Katrina's high school, home and the mall form a right triangle.



Slope MS $= -\frac{3}{2}$

Slope KS $= \frac{2}{3}$ ⊥

MS ⊥ KS so ΔMKS is a Right Δ