4.4 Practice/HW Key

8-3 Exercises

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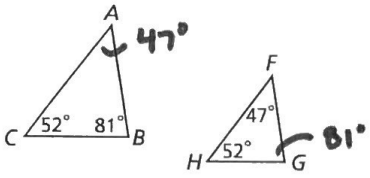
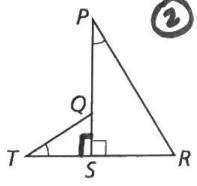
Homework Help

GUIDED PRACTICE

SEE EXAMPLE 1 Explain why the triangles are similar and write a similarity statement.

1. 

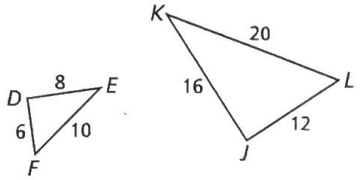
① $\triangle ABC \sim \triangle FGH$ by AA~

2. 

② $\triangle QST \sim \triangle RSP$ by AA~

SEE EXAMPLE 2 Verify that the triangles are similar.

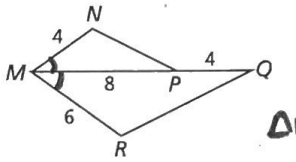
3. $\triangle DEF$ and $\triangle JKL$



③ $\frac{DF}{JL} = \frac{PE}{JK} = \frac{EF}{KL} = \frac{1}{2}$

$\triangle DEF \sim \triangle JKL$ by SSS~

4. $\triangle MNP$ and $\triangle MRQ$



④ $\angle NMP \cong \angle RMQ$

$\frac{MN}{MR} = \frac{MP}{MQ} = \frac{2}{3}$

$\triangle MNP \sim \triangle MRQ$ by SAS~

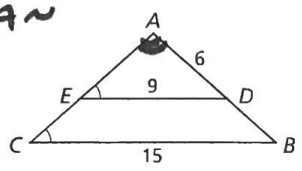
SEE EXAMPLE 3 **Multi-Step** Explain why the triangles are similar and then find each length.

5. AB

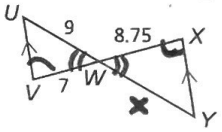
⑤ Similar by AA~

$\frac{6}{9} = \frac{x}{15}$

$AB = 10$



6. WY



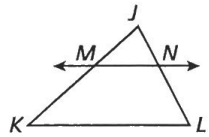
⑥ Similar by AA~

$\frac{7}{8.75} = \frac{9}{x}$

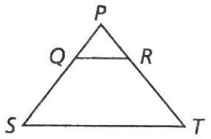
$WY = 11.25$

SEE EXAMPLE 4

7. Given: $\overleftrightarrow{MN} \parallel \overline{KL}$
Prove: $\triangle JMN \sim \triangle JKL$



8. Given: $SQ = 2QP$, $TR = 2RP$
Prove: $\triangle PQR \sim \triangle PST$

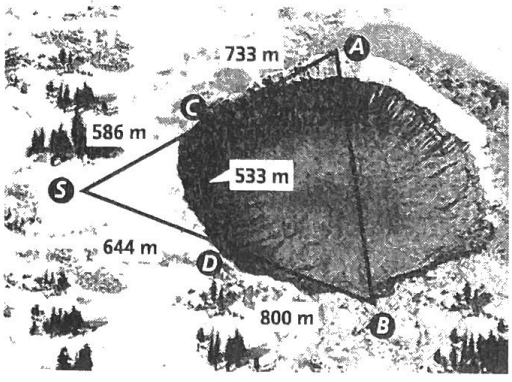


9. The coordinates of A, B, and C are $A(0, 0)$, $B(2, 6)$, and $C(8, -2)$. What theorem or postulate justifies the statement $\triangle ABC \sim \triangle ADE$, if the coordinates of D and E are twice the coordinates of B and C?

SSS or SAS ~

SEE EXAMPLE 5

10. **Surveying** In order to measure the distance AB across the meteorite crater, a surveyor at S locates points A, B, C, and D as shown. What is AB to the nearest meter? nearest kilometer?



$\frac{586}{1319} = \frac{533}{x}$

$\frac{586x}{586} = \frac{703027}{586}$

$x = 1199.7$

PRACTICE AND PROBLEM SOLVING

Independent Practice

For Exercises	See Example
11–12	1
13–14	2
15–16	3
17–18	4
19	5

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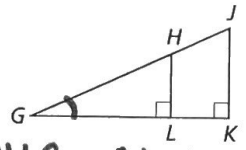
Online Extra Practice

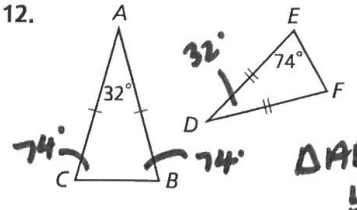
Explain why the triangles are similar and write a similarity statement.

11.



△HLG ~ △JKG by AA~

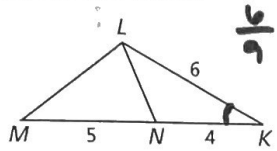
12.



△ABC ~ △DEF by AA~

Verify that the given triangles are similar.

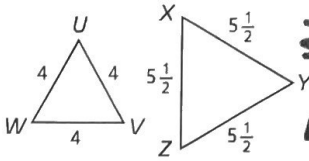
13. $\triangle KLM$ and $\triangle KNL$



$\frac{6}{9} = \frac{4}{6}$ ✓

△KLM ~ △KNL by SAS~

14. $\triangle UVW$ and $\triangle XYZ$



$\frac{4}{5.5} = \frac{4}{5.5} = \frac{4}{5.5}$ ✓

△UVW ~ △XYZ by SSS~

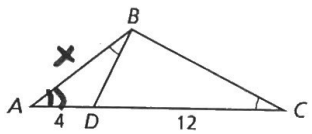
Multi-Step Explain why the triangles are similar and then find each length.

15. AB

$\frac{16}{x} = \frac{x}{4}$

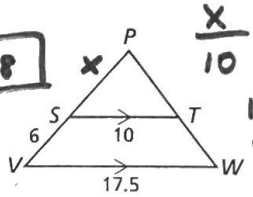
$x^2 = 64$

$x = 8$



16. PS

$x = 8$



$\frac{x}{10} = \frac{6+x}{17.5}$

$17.5x = 60 + 10x$

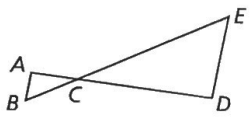
$-10x \quad -10x$

$7.5x = 60$

$\frac{7.5x}{7.5} = \frac{60}{7.5}$

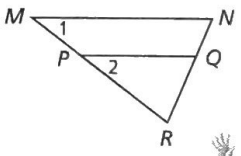
17. Given: $CD = 3AC$, $CE = 3BC$

Prove: $\triangle ABC \sim \triangle DEC$

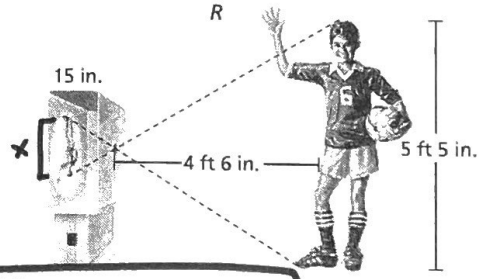


18. Given: $\frac{PR}{MR} = \frac{QR}{NR}$

Prove: $\angle 1 \cong \angle 2$



19. **Photography** The picture shows a person taking a pinhole photograph of himself. Light entering the opening reflects his image on the wall, forming similar triangles. What is the height of the image to the nearest tenth of a foot?



$\frac{4.5}{5.42} = \frac{15}{x}$

$x = 18.06$ in $= 1.5$ ft

Draw $\triangle JKL$ and $\triangle MNP$. Determine if you can conclude that $\triangle JKL \sim \triangle MNP$ based on the given information. If so, which postulate or theorem justifies your response?

20. $\angle K \cong \angle N$, $\frac{JK}{MN} = \frac{KL}{NP}$

yes; SAS

21. $\frac{JK}{MN} = \frac{KL}{NP} = \frac{JL}{MP}$

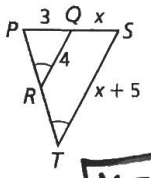
yes; SSS

22. $\angle J \cong \angle M$, $\frac{JL}{MP} = \frac{KL}{NP}$

NO

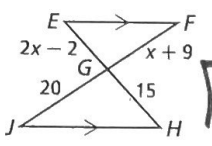
Find the value of x.

23.



$x = 3$

24.



$x = 7$