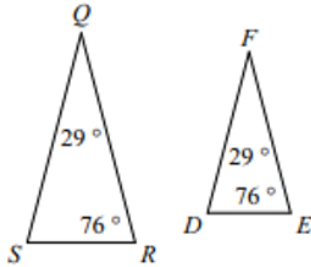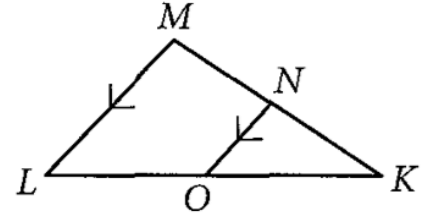State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

1.

29 °
76 °
Q
S
R
F
D
E
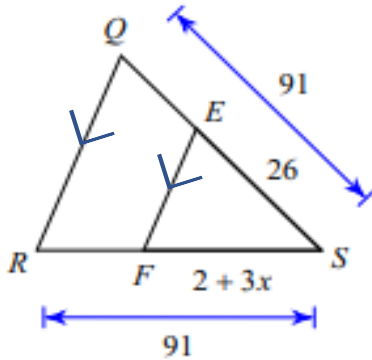29 °
76 °

$\triangle QRS \sim$ _____

2.

M
N
L
O
K

ΔQSR~Δ_____

Identify the Similar triangles, how you know they are similar, find x.

3.

Q
E
R
F
S
91
26
2 + 3x
91

ΔQSR~Δ_____

Bc _____

x = _____

4.

A
E
B
C
D
x + 1
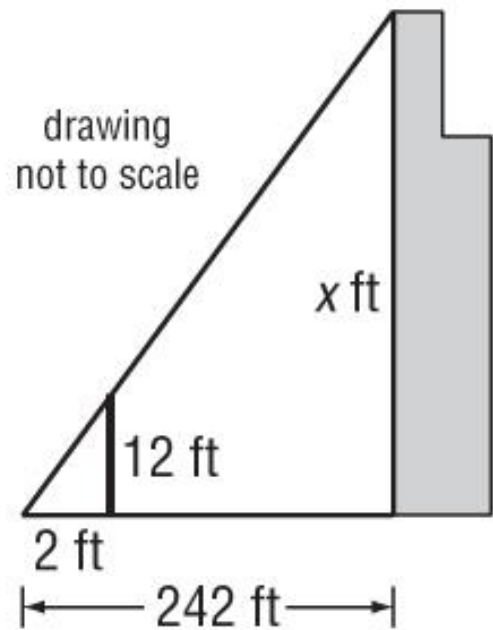15
12
x + 5

ΔABC~Δ_____

BC _____

x = _____

Indirect Measurement

Example 5. A flagpole that is 11 feet tall casts a 5 and a half foot shadow. At the same time of day, a nearby building casts a 10 ft, 7 in shadow. How tall is the building?

Example 6. Josh wanted to measure the height of the Sears Tower in Chicago. He used a 12-foot light pole and measured its shadow at 1 p.m. The length of the shadow was 2 feet. Then he measured the length of the Sears Tower's shadow and it was 242 feet at the same time. What is the height of the Sears Tower?

drawing
not to scale

x ft

12 ft

2 ft

|←——— 242 ft ———→|

Example 7.

The principal asked Hank to demonstrate what he was learning in math class. Hank decided to use the mirror method to estimate the principal's height. Here are the measurements Hank recorded. Use them to find the principal's height.

Height from the ground to Hank's eyes = 1.5 m
Distance from the center of the mirror to Hank = 3 m
Distance from the center of the mirror to the principal = 3.7 m