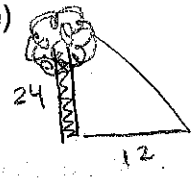
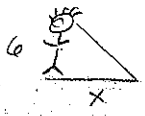
Name: _____ Geometry Key

Similar Triangles: Applications

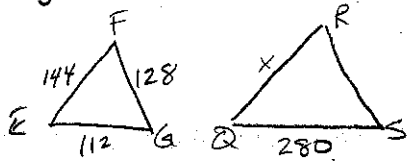
1. A tree 24 feet tall casts a shadow 12 feet long. Brad is 6 feet tall. How long is Brad's shadow? (draw a diagram and solve)





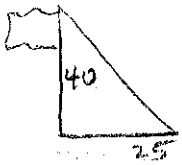
$\frac{x}{12} = \frac{6}{24}$ $24x = 72$ $x = 3$ ft.

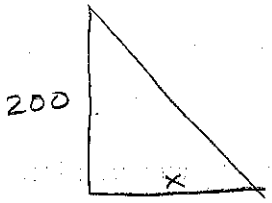
2. Triangles EFG and QRS are similar. The length of the sides of EFG are 144, 128, and 112. The length of the smallest side of QRS is 280, what is the length of the longest side of QRS?



$\frac{112}{280} = \frac{144}{x}$ $112x = (280)(144)$ $112x = 40320$ $x = 360$

3. A 40-foot flagpole casts a 25-foot shadow. Find the shadow cast by a nearby building 200 feet tall.

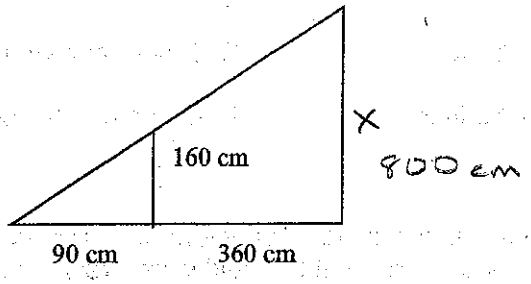




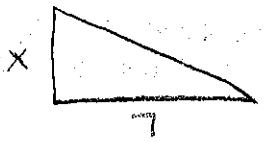
$\frac{40}{200} = \frac{25}{x}$ $40x = 200(25)$ $40x = 5000$ $x = 125$ ft

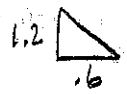
4. A girl 160 cm tall, stands 360 cm from a lamp post at night. Her shadow from the light is 90 cm long. How high is the lamp post?

$\frac{160}{90} = \frac{x}{450}$ $72{,}000 = 90x$ $800 = x$



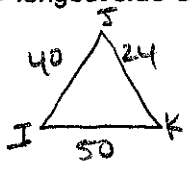
5. A tower casts a shadow 7 m long. A vertical stick casts a shadow 0.6 m long. If the stick is 1.2 m high, how high is the tower?

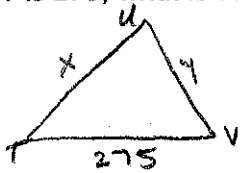




$\frac{x}{1.2} = \frac{7}{.6}$ $.6x = 8.4$ $x = 14$ m

6. Triangles IJK and TUV are similar. The length of the sides of IJK are 40, 50, and 24. The length of the longest side of TUV is 275, what is the perimeter of TUV? (draw a diagram and solve)



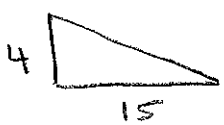


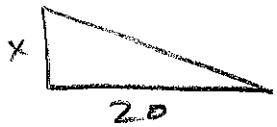
$\frac{50}{275} = \frac{40}{x}$ $50x = 11000$ $x = 220$

$\frac{50}{275} = \frac{24}{x}$ $50x = 6600$ $x = 132$

Perimeter of $\triangle TUV$ = $275 + 220 + 132 = 627$

7. A tree with a height of 4m casts a shadow 15 m long on the ground. How high is another tree that casts a shadow which is 20 m long? (draw a diagram and solve)





$\frac{4}{x} = \frac{15}{20}$ $15x = 80$ $x = 5.3$ m