What's Going On?

Checking In   F.F.M.

Minds on   Reference Angles

Action!   On the Grid
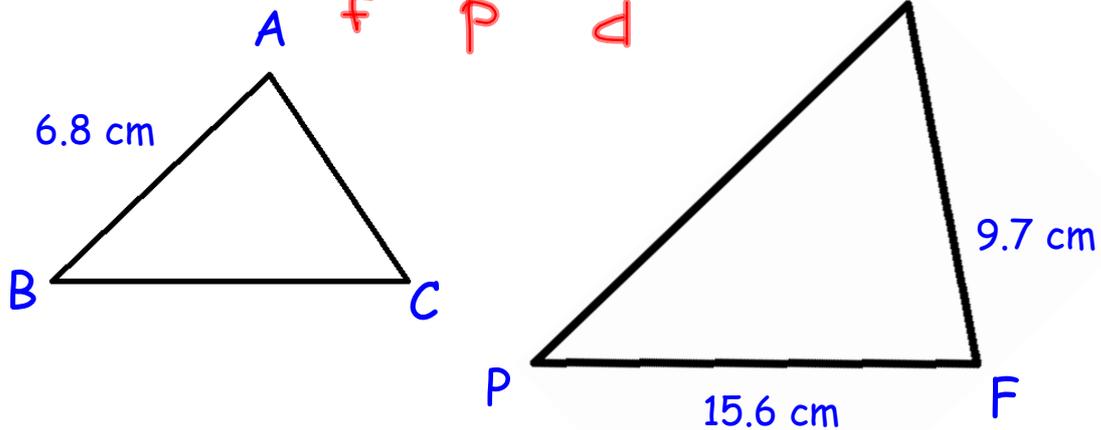
Consolidation   The *tan* Ratio

Learning Goal - I will be able to determine the angles and sides of a right triangle using the tan ratio.

Checking In

F.F.M.

$$\triangle A\overline{BC} \sim \triangle F\overline{PD}$$

$$\frac{a}{f} = \frac{b}{P} = \frac{c}{d}$$

D

A

6.8 cm

9.7 cm

B   C

P   F

15.6 cm

Find the length of side b.

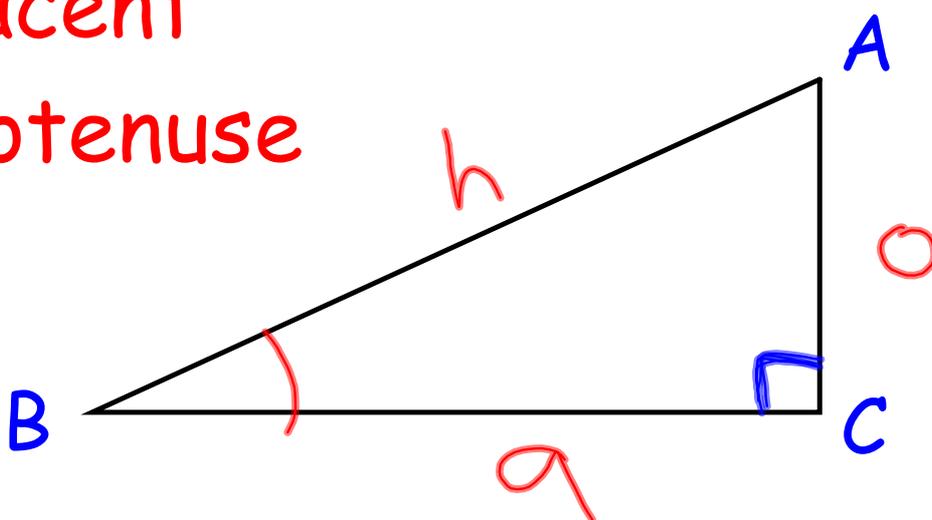**LEAVE YOUR F.F.M. BOOKS OPEN**
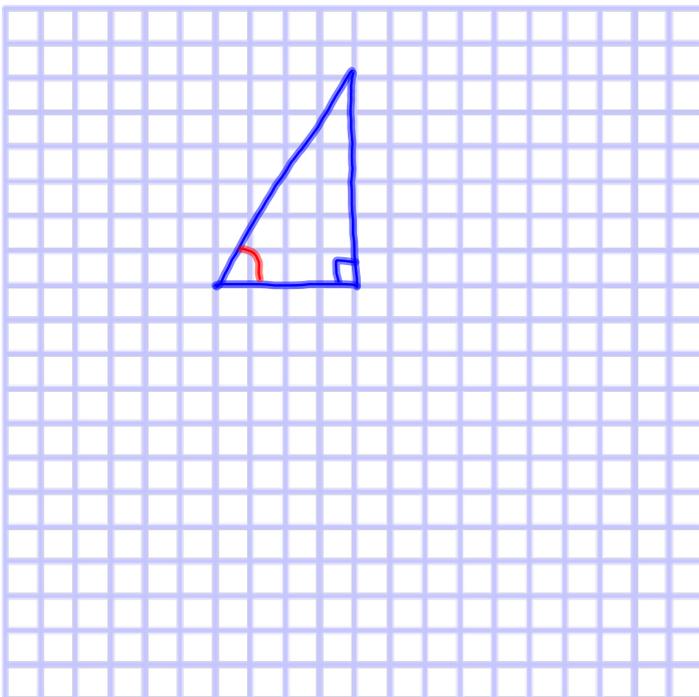
Minds on

Reference Angles
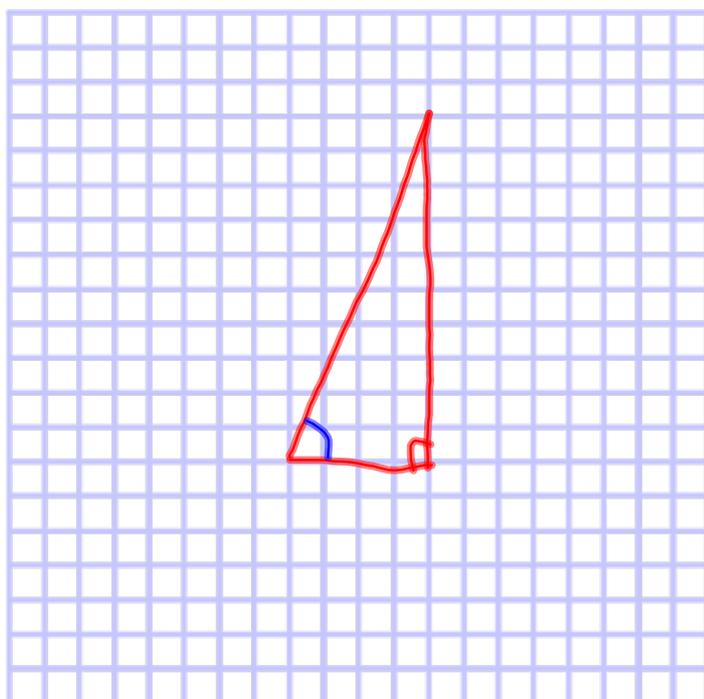
Opposite
Adjacent
Hypotenuse

Action!

It's Magic?

Draw a right triangle with a height to base ratio of 3:2.
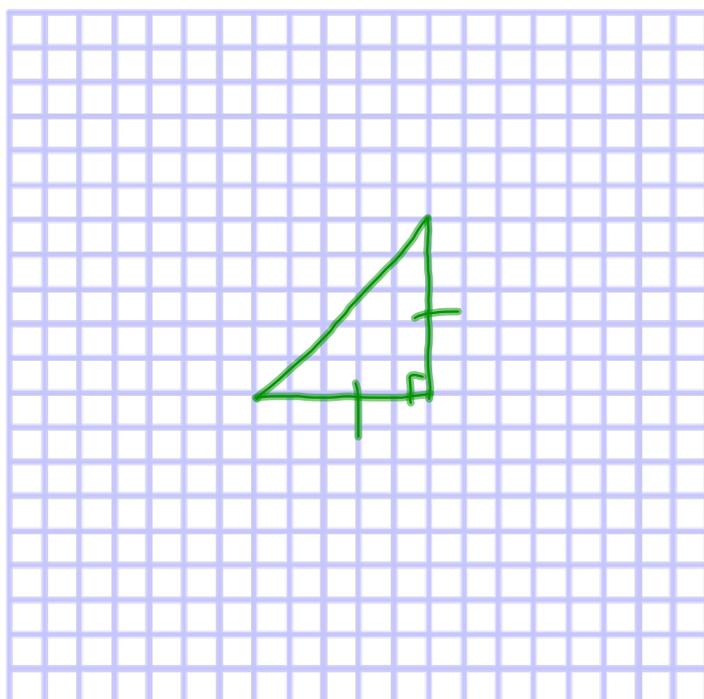
Action!

It's Magic?

Draw a right triangle with a height to base ratio of 5:2.
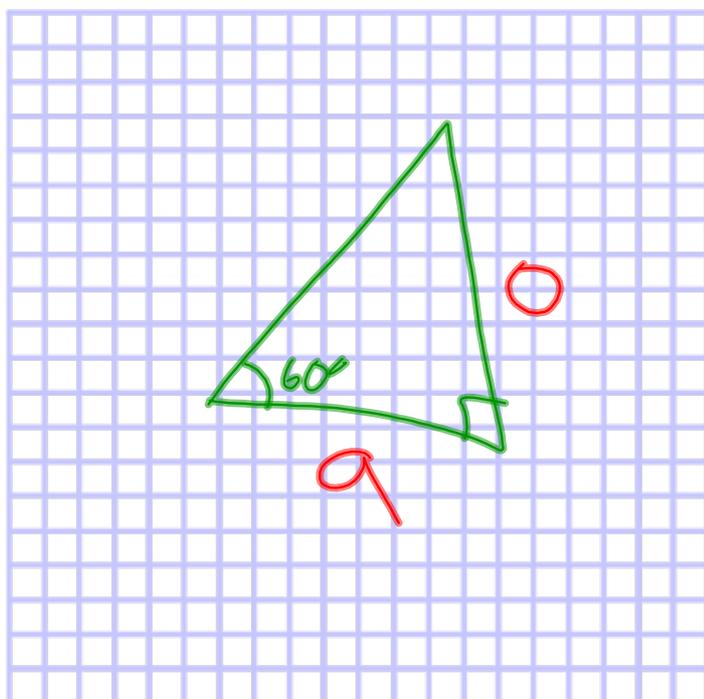
68°

Action!

It's Magic?

Draw a right triangle with a height to base ratio of 1:1.
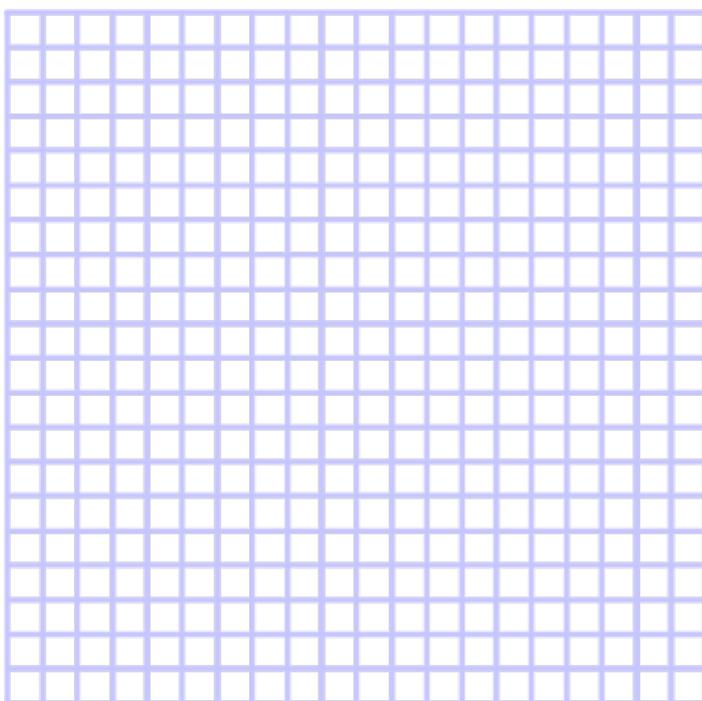
45°

Action!

It's Magic?

Draw a right triangle with a reference angle of 60°.
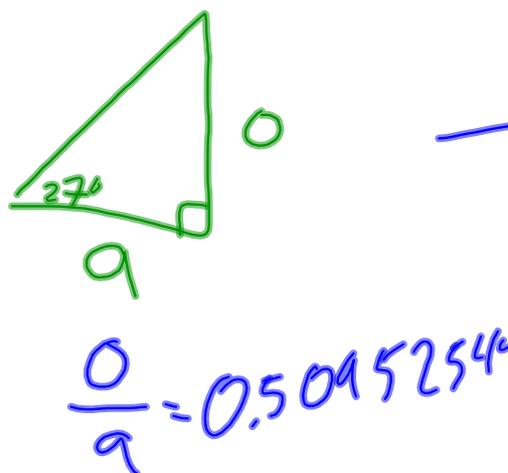
$$\frac{0}{9} = 1.75$$
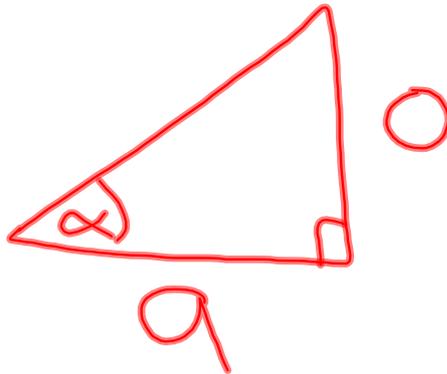
tan 60

Action!

It's Magic?

Draw a right triangle with a reference angle of 27°.

$$\frac{O}{9} = 0.509525449$$

Consolidation

The *tan* Ratio

tan (angle) = <u>opposite</u>
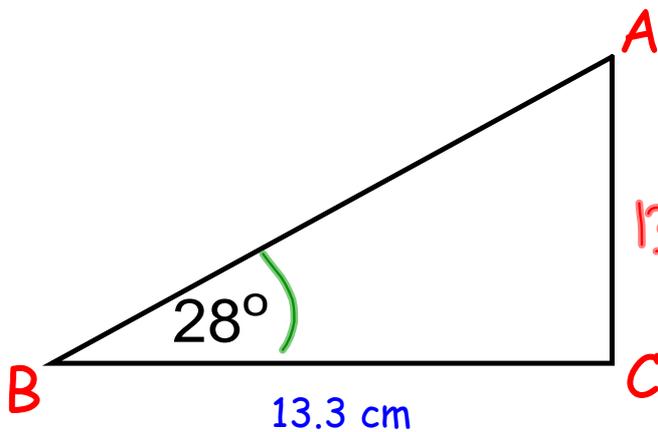adjacent

WHITEBOARDS

Consolidation

The *tan* Ratio

Scientific Calculator

$$\text{tan (angle)} = \frac{\text{opposite}}{\text{adjacent}}$$

Determine the length of side b.

$$\tan(28°) = \frac{b}{13.3}$$

$$13.3 \times 0.53 = \frac{b \times 13.3}{13.3}$$

Triangle with vertex A at top right, B at bottom left, C at bottom right. Angle 28° at B, side BC labeled 13.3 cm.

Consolidation

The *tan* Ratio

$$\text{tan (angle)} = \frac{\text{opposite}}{\text{adjacent}}$$

Scientific Calculator

Determine the length of side b.

$$\tan 38° = \frac{b}{21.1}$$

$$b = 21.1 \times \tan 38°$$

38°

21.1 cm

Consolidation

The *tan* Ratio

Scientific Calculator

tan (angle) = opposite
                adjacent

Determine the length of side a.

$$\tan 28° = \frac{5.9}{a}$$

$$a = \frac{5.9}{\tan 28°}$$

$$a = 11.1$$

A

5.9 cm

28°

B   C

Consolidation

The *tan* Ratio

Scientific Calculator

tan (angle) = opposite
              adjacent

Determine the length of side a.

A

54.3 cm

38°
B   C
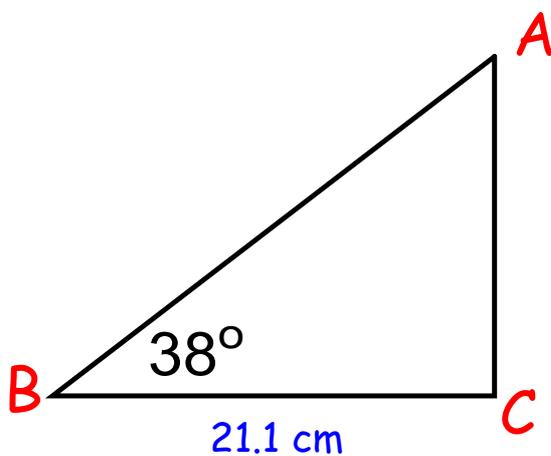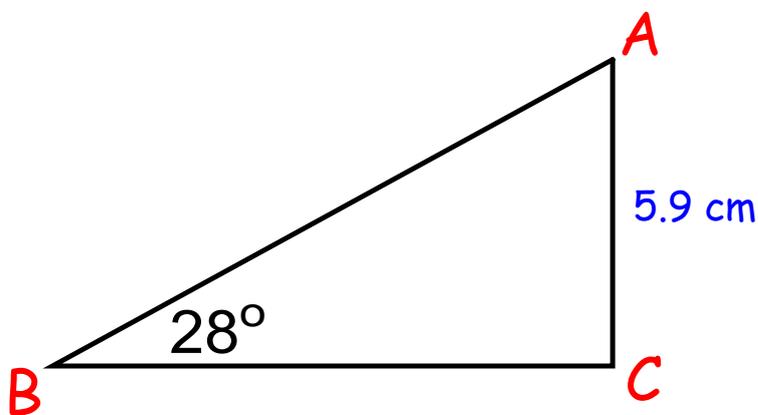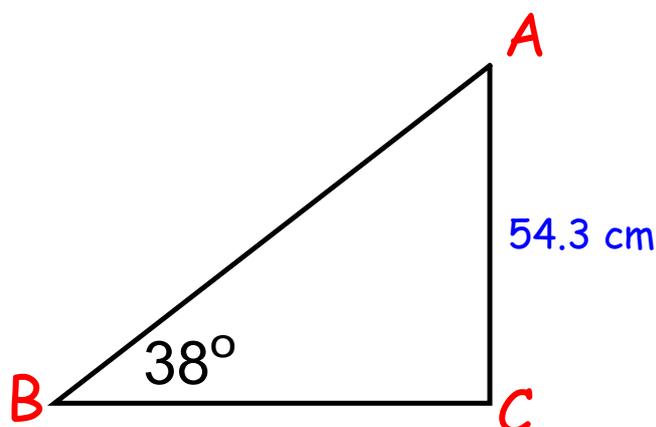
$\tan 38° = \dfrac{54.3}{1} = \dfrac{54.3}{a}$

$\dfrac{54.3 \times 1}{\tan 38°} = \dfrac{a}{54.3} \times 54.3$

Consolidation

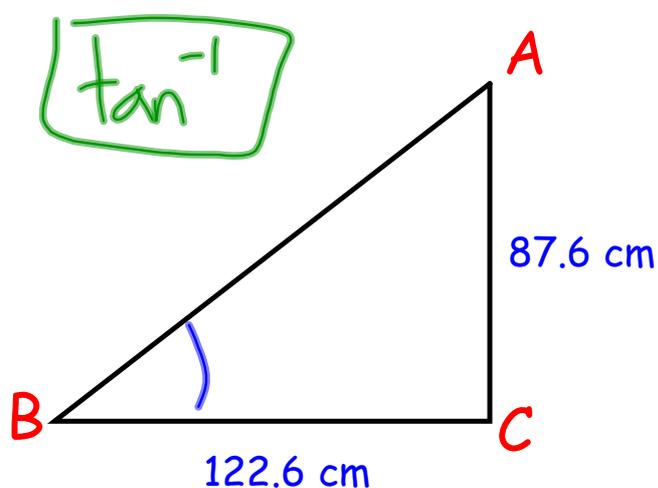# The *tan* Ratio

Scientific Calculator

tan (angle) = opposite
adjacent

Determine the measure of angle B.

$$\tan B = \frac{87.6}{122.6}$$

$$\tan B = 0.7145$$

A

87.6 cm

B

122.6 cm

C

$\tan^{-1}$

Consolidation

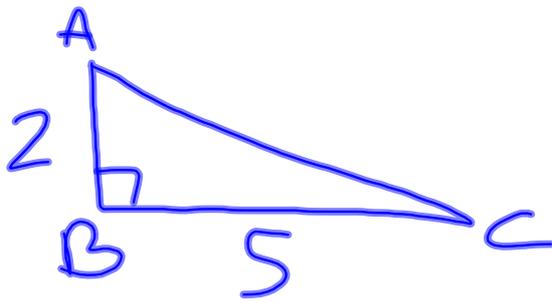# Homework and Challenge Problem

Page 330-333

#2, 3, 5, 6, 7, 9, 12, 13, 17-20

Challenge Problem

What is the highest value of tan (α)?
When does it occur?

Explain!

$$\tan C = \frac{2}{5}$$

$$\tan C = 0.4$$

$$\tan^{-1}(0.4)$$