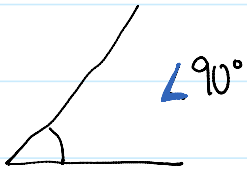
Chapter #2 Trigonometry

September-25-13
11:01 AM

→ the study of angles and triangles

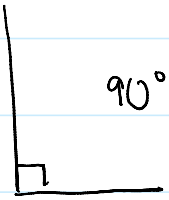
2.1 The Tangent Ratio

Angles Review



acute

obtuse



right

angle of inclination (elevation):

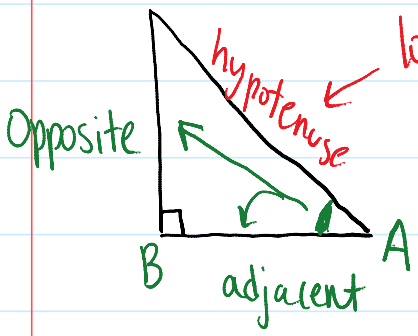
ex. a ramp

→ the acute angle between the horizontal and a a line

angle of depression:

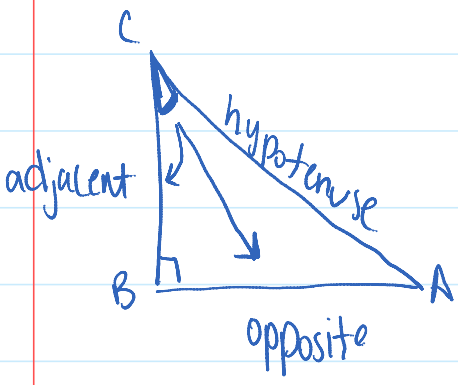
→ the angle between the horizontal and the line of sight looking down

We name the sides of right triangles (△) in relation to one of its acute angles (∠)



lengths of side opposite $\angle A$: length of side adjacent $\angle A$

→ this ratio is called the tangent ratio of $\angle A$

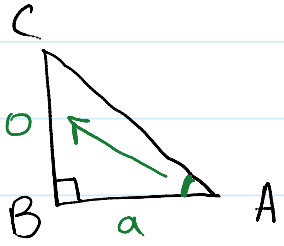


→ written as $\tan A$ ← this # is refferring to the angle

ex. $\tan 35°$

→ written as a fraction

$$\tan A = \frac{\text{opposite length}}{\text{adjacent length}}$$



* see data booklet

* RECALL

SOH CAH TOA

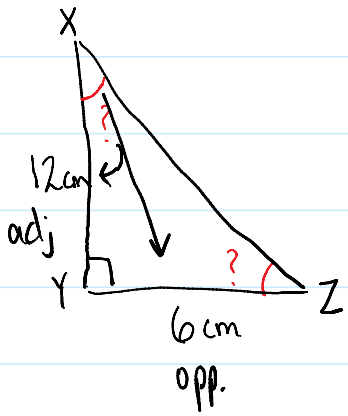
$\sin = \frac{o}{h}$ $\cos = \frac{a}{h}$ $\tan = \frac{o}{a}$

* calculator ⇒ degree mode

* calculator ⇒ degree mode

Ex. #1

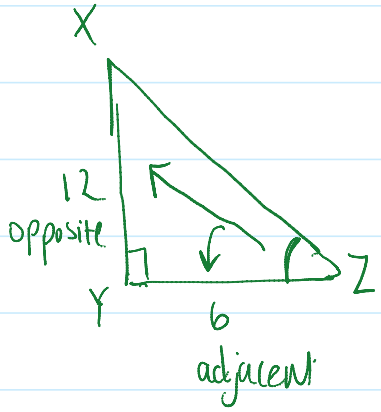
Calculate tan x and tan z



$$\tan \angle X = \frac{o}{a} = \frac{6}{12} = 0.5$$

convert decimal → degrees

$$\tan^{-1}(0.5) = 26.565 \approx \boxed{27^\circ}$$



$$\tan \angle Z = \frac{o}{a} = \frac{12}{6} = 2$$

$$\tan^{-1}(2) = 63.4349 \approx \boxed{63^\circ}$$

*Another strategy....

sum of a triangle = 180°

↳ you know 1 ∠ is 90°

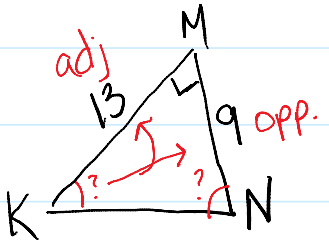
↳ you solved 1 ∠

↳ find the difference

$$180^\circ - 90^\circ - 27 = \boxed{63^\circ}$$

Ex. #2

Calculate $\angle K$ and $\angle N$



$$\tan \angle K = \frac{O}{a} = \frac{9}{13} = 0.692$$

$$\tan \angle K = 0.692$$
$$\tan^{-1}(0.692) = \angle K$$
$$34.69^\circ = \angle K$$
$$\boxed{35^\circ} \approx \angle K$$

$\angle N$

$$180^\circ - 90^\circ - 35^\circ = \boxed{55^\circ}$$

Exercises pg. 75 # 3-6, 8-11, 21