College Ready? Lessons Learned from Math and Physics

Thursday, October 22, 2015 -- 8:00 AM - 9:00 AM

Reno-Sparks Convention Center, D8

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In this diagram, what should go in box B?

- 1
- starting number and unit
- unit to be cancelled out
- unit wanted
- answer

In this diagram, what should go in box C?

- 1
- starting number and unit
- unit to be cancelled out
- unit wanted
- answer

In this diagram, what should go in box D?

- 1
- starting number and unit
- unit to be cancelled out
- unit wanted
- answer

In this diagram, what should go in box E?

- 1
- starting number and unit
- unit to be cancelled out
- unit wanted
- answer

In metric conversions, which unit always gets a "1"?

- ○ both
- ○ larger
- ○ smaller
- ○ none

What number is best associated with the prefix milli?

- ○ 1
- ○ 10
- ○ 100
- ○ 1000

Statements
Sciences
cosine
zero
slope
area
range
domain from context
ambient condition
x, y, d, s, t'
x−intercept
−4 > −3
Linearize
Parabola
Horizontal Axis
m/s/s

Reasons
Mathematics
sine
no solution
derivative
antiderivative
domain
from math rules
starting values – y−int
C
y−intercept/roots/
zeros
$-4 < -3$
Regression
Quadratic
X Axis
$\frac{m}{s2}$

ordinate abscissa

(x,y) or y vs. x

DRY MIX

Independent – Dependent

Manipulated – Responding

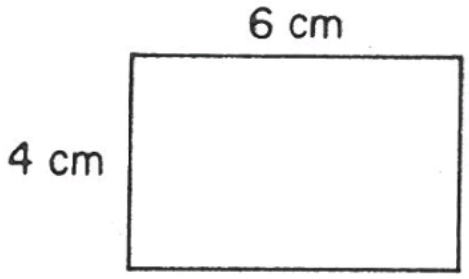
Input – Output

LEVEL 300

Moderately Complex Procedures and Reasoning

NAEP 1986

Know Too Much



What is the area of this rectangle?

- A) $4\ cm^2$
- B) $6\ cm^2$
- C) $10\ cm^2$
- D) $20\ cm^2$
- E) $24\ cm^2$

Age 9	Age 13	Age 17
0.6	15.9	51.1

Kepler's Third Law

III. The ratio of the squares of the revolutionary periods for two planets is equal to the ratio of the cubes of their semimajor axes:

$$\frac{P_1^2}{P_2^2} = \frac{R_1^3}{R_2^3}$$

Literal Equations

PV = nRT

Solve $d = rt$ for r

$$d = rt$$

$$\frac{d}{t} = \frac{rt}{t}$$

$$\frac{d}{t} = r$$

ax^2+bx+c $c+ax^2+bx$

© $\frac{-1}{2} \cdot gt^2+vo \cdot t+ho$

Statements

$$\sin(\theta) = \frac{y}{R}$$

$$\cos(\theta) = \frac{x}{R}$$

Reasons

$x = R * \cos(\theta)$

$y = R * \sin(\theta)$

© Inverses

$$period = \frac{1}{freq}$$

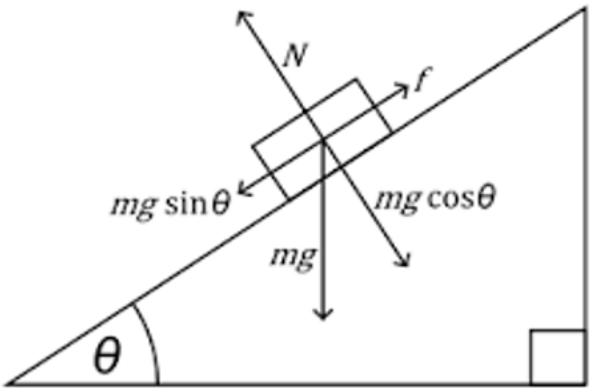
$$period = \frac{1}{freq}$$

$$freq = \frac{1}{period}$$

$$freq = \frac{1}{period}$$

© $(°F, °C)$ or $(°C, °F)$

Inclined Plane : Co-functions



_Na	$6.02214\text{E}23 \cdot \frac{1}{\_mol}$
$6.022 \cdot 10^{23}$	6.022E23
6.022E23	6.022E23
6.022E23	6.02E23
6.022E23	6.E23

$\cos(x) = x$

$x^2 = 0$

The average acceleration of an object is equal to the change in velocity of the object over a period of time. A force is a push or pull on an object. Forces cause objects to accelerate. According to Newton's second law, the acceleration, *a*, of an object is proportional to the net external force, *F*, that acts on the object. The acceleration of the object is also inversely proportional to the mass, *m*, of the object. Another way of stating Newton's second law is: $F = ma$.

Problem 3

Make a statement.
What if …

The most important thing I learned today …