# Statistics

# Spring 2023

# Lecture 1



Feb 19-8:47 AM

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Basic Math Review: SG.1

1) Simplify $\dfrac{45}{36} = \dfrac{\cancel{3} \cdot 15}{\cancel{3} \cdot 12} = \dfrac{\cancel{3} \cdot 5}{\cancel{3} \cdot 4} = \boxed{\dfrac{5}{4}}$

45 [÷] 36 [Enter]   1.25

[MATH] [1: ▶Frac][Enter]   $\dfrac{5}{4}$        1) $\dfrac{5}{4}$

All Answers must be in the designated Area

2) Convert .5% to

a) Decimal   $.\dot{5}\% = .5(.01) = \boxed{.005}$

.5 [×] .01 [Enter]              a) .005

b) Reduced fraction

[MATH] [1:▶Frac][Enter]        b) $\dfrac{1}{200}$
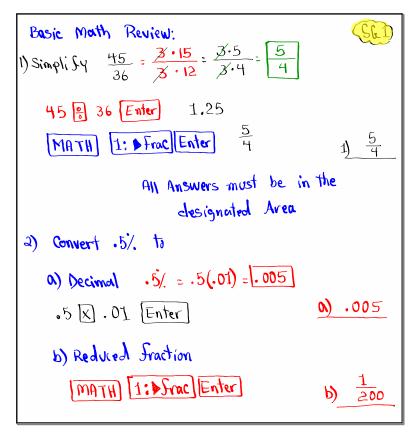
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3) ( 18% of 425 ) students liked online classes.
How many of them liked online classes?
If decimal, round-up.

$.18 (425) = 76.5$

4) __77__

4) In a Survey of 800 students, 36 of them were Smokers.
What percent of the Survey were Smokers?
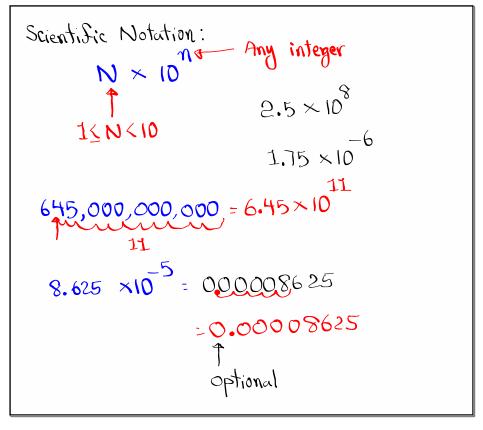
36 of 800 were Smokers.

36 is what percent of 800?

$36 = \dfrac{P}{100} \cdot 800$

$36 = 8P$

$P = \dfrac{36}{8} \qquad P = 4.5$

4) __4.5%__

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Scientific Notation:

$N \times 10^{n}$ ← Any integer

$1 \le N < 10$

$2.5 \times 10^{8}$

$1.75 \times 10^{-6}$

$645,000,000,000 = 6.45 \times 10^{11}$

11

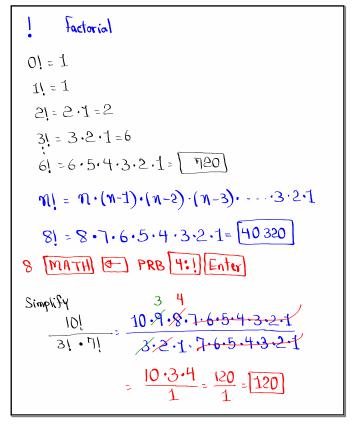$8.625 \times 10^{-5} = 0.00008625$

$= 0.00008625$

↑ Optional

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Use Your Calc to Simplify

$$\frac{8(125) - 10^3}{8(8-1)} = \frac{8(125) - 1000}{8(8-1)} = \frac{1000 - 1000}{8(7)}$$

$$= \frac{0}{56} = \boxed{0} \qquad\qquad 0$$

Do not use ∅ for Zero.

Simplify $\quad \dfrac{83 - 70}{\frac{8}{\sqrt{25}}} = \dfrac{13}{\frac{8}{5}} = \dfrac{13}{1.6} = 8.125$

$$8.125$$

Round to | Ans.
Whole | 8
 | 
1-decimal | 8.1
2-decimal | 8.13

Round up to a whole # $\boxed{9}$

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! Factorial

$0! = 1$

$1! = 1$

$2! = 2 \cdot 1 = 2$

$3! = 3 \cdot 2 \cdot 1 = 6$

$6! = 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = \boxed{720}$

$n! = n \cdot (n-1) \cdot (n-2) \cdot (n-3) \cdot \ \cdots \ \cdot 3 \cdot 2 \cdot 1$

$8! = 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = \boxed{40\,320}$

8 $\boxed{\text{MATH}}$ $\boxed{\leftarrow}$ PRB $\boxed{4:!}$ $\boxed{\text{Enter}}$

Simplify

$$\frac{10!}{3! \cdot 7!} = \frac{10 \cdot \overset{3}{9} \cdot \overset{4}{8} \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{3 \cdot 2 \cdot 1 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}$$

$$= \frac{10 \cdot 3 \cdot 4}{1} = \frac{120}{1} = \boxed{120}$$

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Simplify

$$\sqrt{\frac{(.2)(.8)}{25}} = \sqrt{\frac{.16}{25}} = \sqrt{.0064} = \boxed{.08}$$

$\boxed{\text{2nd}}$ $\boxed{x^2}$ $.2 \boxed{\times} .8 \boxed{\div} 25 \boxed{\text{Enter}}$ $.08$

let's convert this into a reduced fraction

$\boxed{\text{MATH}}$ $\boxed{1: \blacktriangleright \text{Frac}}$ $\boxed{\text{Enter}}$ $\frac{2}{25}$

$.08$ in percentage

$.08 \ (100)\%$ $= \boxed{8\%}$

Feb 6-8:03 AM

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Given $\quad y = 2.5x - 10$

1) find $y$ when $x = 4$.

$\qquad y = 2.5(4) - 10 = 10 - 10 = 0 \qquad$ 1) $\underline{\quad 0 \quad}$

2) find $x$ when $y = -10$

$\qquad -10 = 2.5x - 10 \qquad$ $2.5x = 0$

$\qquad -10 + 10 = 2.5x \qquad$ $x = \frac{0}{2.5} \quad x = 0$

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ 2) $\underline{\quad 0 \quad}$

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Given    $5x - 3y = -15$

| $x$ | $y$ |
|-----|-----|
| 0   | 5   |
| -3  | 0   |

Graph    $y = \dfrac{-2}{5}x + 4$

Slope-Int. Form

$y = mx + b$

$m = \dfrac{-2}{5}$ , Y-Int $(0,4)$

down

Right

$(0,4)$

$-2$

$+5$

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I surveyed 100 students.

20 were taking Math only.

30   "   "   English only.

15   "   "   both Math and English.

Construct Venn Diagram.

One way To organize our Survey



Math    English

20 | 15 | 30

35

Total = 100 ✓

$100 - [20 + 15 + 30]$

$= 100 - 65$

$= \boxed{35}$

SG 1

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