

Basic Math

A day in the life of Alex

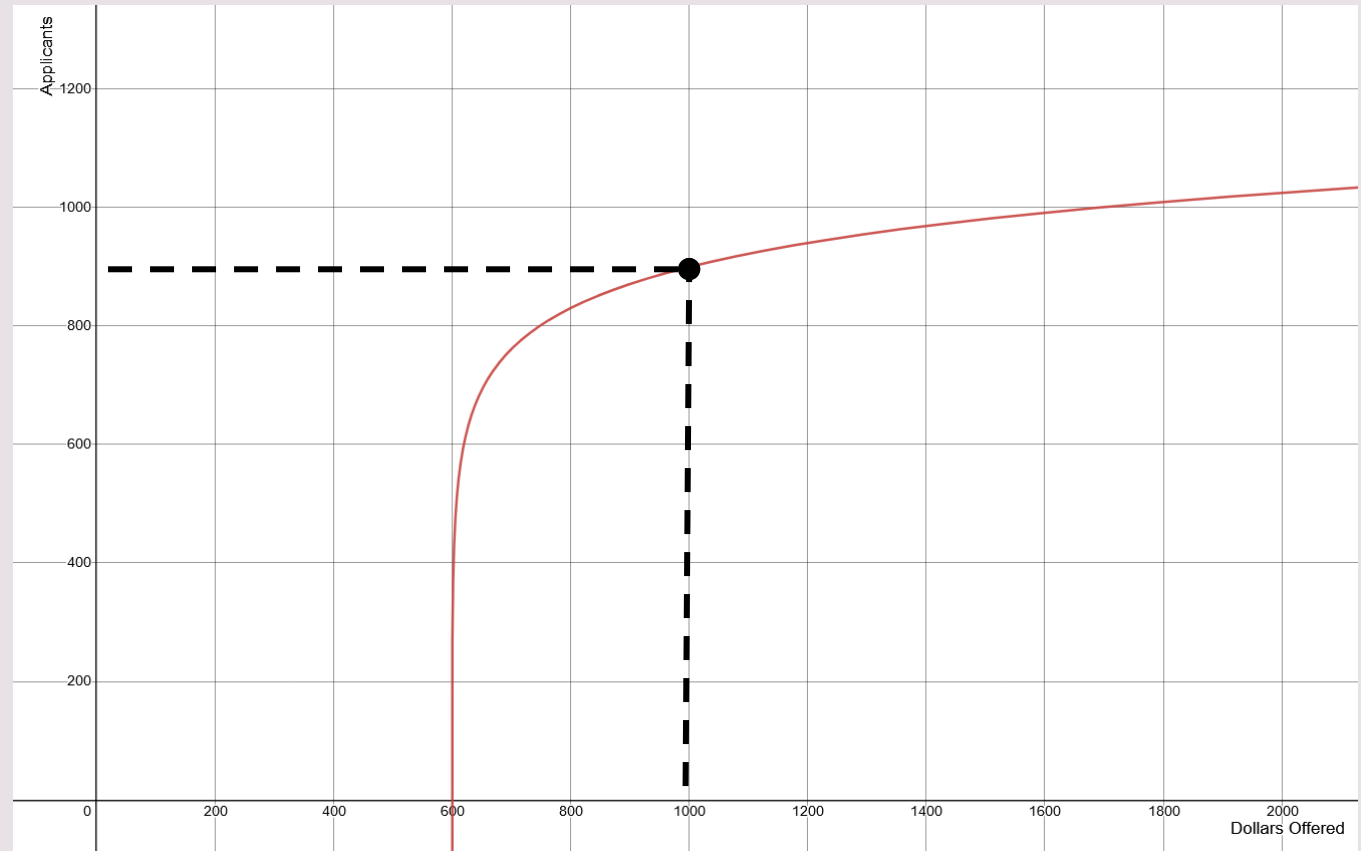
Alex's Itinerary

- 1) Work
- 2) Shopping
- 3) Check bank
- 4) Gas station
- 5) Eat dinner
- 6) Housework
- 7) Read newspaper
- 8) Check mail

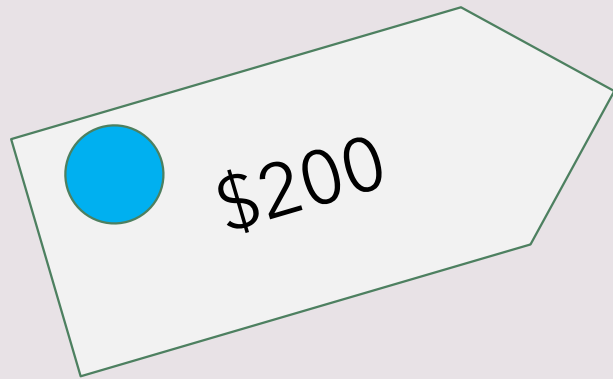
Work

“How many applicants will we get if we offer \$1,000?”

900 applicants



Shopping



$$\$200 \times 15\% = \$30$$

$$\$200 - \$30 = \$170$$

● 10% off

● 15% off

● 25% off

Check bank

| | |
|----------------|-------------|
| Checking | Amount |
| 0.45% interest | \$ 2,122.89 |

How much money will Alex have in 2 years?

“All accounts are compounded monthly”

$$A = P \left(1 + \frac{r}{n} \right)^{nt}$$

$$A = 2,122.89 \left(1 + \frac{0.0045}{12} \right)^{12 \times 2}$$

$$A = 2142.08$$

A = Future value

P = Principal

r = APR (annual interest rate)

n = Number of times compounded per year

t = Years elapsed

$A =$

$P = \$2,122.89$

$r = 0.45\%$

$n = 12$

$t = 2$

Gas station

How far can Alex drive on a full tank?

22 mpg

\$3 per gallon

\$45 gas station charge

$$\frac{\cancel{\text{miles}}}{\cancel{\text{gallon}}} \times \frac{\cancel{\text{gallon}}}{\text{tank}} = \frac{\text{miles}}{\text{tank}}$$

$$\frac{\cancel{\$45}}{1 \text{ tank}} \times \frac{1 \text{ gallon}}{\cancel{\$3}} = \frac{15 \text{ gallons}}{\text{tank}}$$

$$22 \times 15 = \frac{330 \text{ miles}}{\text{tank}}$$

Eat dinner

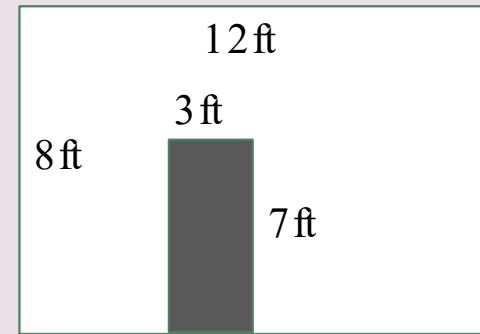
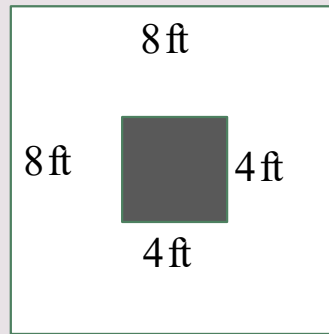
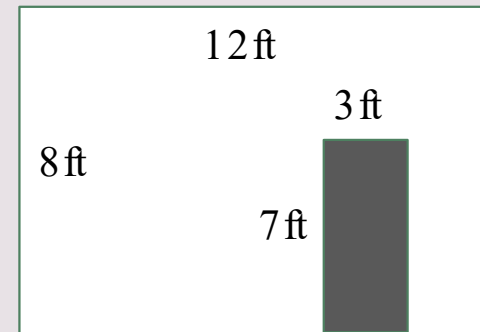
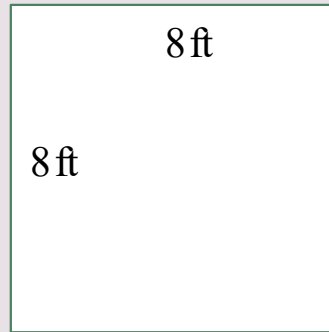
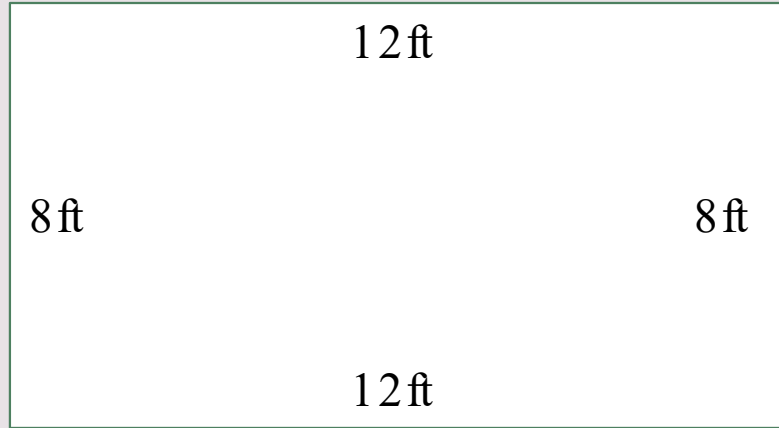
12 oz of spinach

"1 oz = 28.3495 g"

$$\frac{12\text{oz}}{1} \times \frac{28.3495\text{g}}{1\text{oz}} = 340.194\text{g}$$

Housework

8 ft ceilings



\$24.98

| | |
|----------------------------------|-------|
| Maximum Coverage Area (Sq. Feet) | 400.0 |
|----------------------------------|-------|

$$8 \times 8 \times 2 + 12 \times 8 \times 2 - 4 \times 4 - 3 \times 7 \times 2 = 262 \text{ sqft}$$

2 coats \rightarrow 524 sqft

$$\frac{524 \text{ sqft}}{1} \times \frac{1 \text{ can}}{400 \text{ sqft}} = 1.31 \text{ cans} \rightarrow \frac{2 \text{ cans}}{1} \times \frac{\$24.98}{1 \text{ can}} = \$49.96$$

Read Newspaper

“One out of every three Americans has had Covid at some point”

Alex's office employs 252 workers

$$\frac{1}{3} = \frac{x}{252}$$

$$3x = 1 \times 252$$

$$x = \frac{252}{3} = 84 \text{ people}$$

Check mail

| | |
|--------------|------|
| Minutes used | 51 |
| Total charge | 25.1 |

$$(x_1, C_1) = (51, 25.1)$$

| | |
|--------------|------|
| Minutes used | 77 |
| Total charge | 27.7 |

$$(x_2, C_2) = (77, 27.7)$$

x = Minutes used
 C = Monthly charge

$$C - C_1 = m(x - x_1)$$

$$m \equiv \frac{C_2 - C_1}{x_2 - x_1}$$

$$m = \frac{27.7 - 25.1}{77 - 51}$$

$$m = 0.1$$

$$C - 25.1 = 0.1(x - 51)$$

$$C - 25.1 = 0.1x - 5.1$$

$$C = 0.1x - 5.1 + 25.1$$

$$C = 0.1x + 20$$