The 10' tall walk-in ice cream freezer has a volume of 1680 cubic feet. It's square-based and, if half full, it's 7 feet on each side. Ice cream is sold in 1 pint containers, 1 quart containers, and half gallon containers have a volume of 384 cubic inches. How many containers can fit in the freezer?

$10 * 6 * 3 = 180$ — Volume in cubic feet
$180 * 1728 = 311,040$ — we need to convert units
$12^3 + 12^3 + 12^3 = 1728$ — 1 cubic foot = 1,728 cubic inches
$(1800 - 180) * 1728 = 2,799,360$ — cubic inches of available space
$\frac{2,799,360}{384} = 7,290$ — 7,290 half gallons of ice cream you could store in freezer

Mary is planning an ice cream party. She plans to offer servings of three scoops of ice cream, and she wants to make sure she has enough ice cream. She purchased 3 different types of ice cream and three kinds of toppings. Ice cream is always scooped before toppings are added. How many ways can the servings be assembled?

2 ways to pick the first scoop
2 ways to pick the second scoop
2 ways to pick the third scoop
Total ways = $2 * 2 * 2 = 8$

Ways to assemble 3 toppings:
$3 * 2 * 1 = 6$
$125 * 2 * 3375$ ways to assemble ice cream

Richard wants to make strawberry milk shake. Recipe calls for 1/2 cup of milk and 2 scoops of strawberry ice cream. Each scoop is 1/8 cup. Richard needs 25 milk shake for a party. How many cups of ice cream and milk does he need?

$\frac{1}{2} * 25 = 12.5$ cups of milk per shake
$\frac{1}{8} * 2 = \frac{1}{4}$
$25 * 1.075 = 26.25$ cups of milk needed for 25 shakes
$\frac{1}{4} * 25 = 6.25$ cups of strawberry ice cream per shake
$25 * 3.75 = 14.38$ cups of ice cream needed for 25 shakes

Chen 3 hours is not fast enough for the manager. If she can afford to add one person to the team, how fast will that person need to be to complete job in 4 hours?

$\frac{1}{3} + \frac{1}{x} = \frac{1}{4}$
$\frac{x}{3x} + \frac{3}{x} = \frac{3}{4x}$
$3 * 4 = \frac{3}{4x} * 4x$
$12 = 3x$
$\frac{12}{3} = \frac{3x}{3}$
$4 = x$
Multiply everything by 4x
$\frac{1}{2} = \frac{1}{x}$
Lesson common multiple is 36

Shown can stop the entire warehouse in 12 hours. Tom can stop the same warehouse in 9 hours. How long does it take they stop it together?

$\frac{1}{12} + \frac{1}{9} = \frac{1}{x}$
$\frac{9}{36} + \frac{4}{36} = \frac{1}{x}$
$\frac{13}{36} = \frac{1}{x}$
$36 * \frac{13}{36} = \frac{1}{x} * 36$
$36 * 13 = 36$
$3 * 4 = 36$
$x = \frac{36}{13}$ Takes 2 and 1/13 hours to shut together

Shawn's rate is 1/12 pitch per hour. Tom's rate is 1/9 pitch per hour. Their rate together is 1/x pitch per hour

Customer wants to make a photo mirror. Wants it to be 2 times as wide as it is tall. Wants it to have 150 square inches of area. What's the measurement for each side?

$\frac{8}{16} = \frac{16}{32}$
$8 * 16 = 128$
Percent of 16 is 32
$\sqrt{128} = 11.3$
Multiply everything by 16
$\frac{1}{2} = \frac{x}{16}$

Cylinder contains ice cream — Volume of cylinder $= V = \pi r^2 h$

Need to fill cones — Hemisphere is 2/3 of sphere
$V = \frac{2}{3}\pi r^3$
$V = \frac{2}{3} * 3.14 * 3^3$
$V = 56.52$ in^3
12 inches — Volume of cone $= V = \frac{1}{3}\pi r^2 h$
$V = \frac{1}{3} * 3.14 * 3^2 * 12$
$V = 113.04$ in^3
36 inches — Volume of sphere $= V = \frac{4}{3}\pi r^3$
$V = \frac{4}{3} * 3.14 * 3^3$
$V = 113.04$ in^3
Need ~48.3 cubic inches of ice cream

Walmart has ~400 employees at any one time. There are ~2.5 breaks and ~1.5 meals employees. For holiday seasonal hires, corporate wants to maximum at least 1/4 meals. How many women should be hired?

$408 * \frac{1}{16} = 136$ ~136 males are currently employed at this store

If 136 males will represent 25% of the overall seasonal staff, then

$136 * 4 = 544$

Current male to female staff: 408 / 136 — 75% / 25%
Male to female staff if males are 1/4: 544 / 408 — 57% / 43%

Can hire and additional 136 females before needing to hire another male

The manager is choosing between two long-distance phone plans. Plan A has a monthly fee of $12.5 and it costs per minute for all calls. Plan B has a $2 monthly fee and a charge of 12 cents for all calls. Calculate the number of minutes a call would last for the plans to be equal?

1 + 0.6x minutes per account

Plan A = 15 + 0.08t
Plan B = 3 + 0.12t

$15 + 0.08t = 3 + 0.12t$
$0.12t - 0.08t = 15 - 3$
$0.04t = 12$
$t = 300$

at 300 minutes the phone plans are equal

Helen earns $12.50 per hour. If she works more than 35 hours a week, she receives overtime at 1.5 times her regular pay. Let x represent the number of hours she works. Helen wants to absolute check that her pay check is correct.

x overtime hours she worked

x = 35 + x

Pay = 12.50 * 35 + (x)12.50(1.5)x

$352.50 = 263.5 + 11.25x$
$90 = 11.25x$
$8 = x$
Helen worked 43 hours of overtime

Walmart sells two insurance plans. Plan A pays $10 / hour plus 20% of medical bills. Plan B pays $12.50, but only 20% thereafter. Let x represent the number of hours worked. For what amount of money will plan B pay a bill more?

$190 + 0.3(x - 190)$ — $220 + 0.2(x - 220)$

Plan A — Plan B
Looking for case where plan B is cheaper

$190 + 0.3(x - 190) > 220 + 0.2(x - 220)$
$190 + 0.3x - 57 > 220 + 0.2x - 44$
$0.3x - 0.2x > 220 - 190 - 44 + 57$
$0.1x > 43$
$x > 430$
Spend over $430 (7 hours plan B

Walmart has a industrial room. Temperature in the room is 20 degrees initially. Initial temperature of room when off is 70°C. If it's turn on at, what will the temp be in 7 minutes?

We have two points (0, 70) and (5, 20)

$\frac{70 - 20}{0 - 5} = \frac{y - 20}{x - 5}$
$\frac{50}{-5} = \frac{y - 20}{x - 5}$
$-10(x - 5) = y - 20$
$-10x + 50 = y - 20$
$-10x + 70 = y$
$-10(7) + 70 = y$
$-70 + 70 = y$
$0 = y$
We will make 0 after 7 minutes

Customer just placed an order to find 50 people. The customer only has 12 ft by 18 ft space on the party. Will the customer be able to fit 50 people? A 12 ft sandwich tray feeds 5 people. How many pans of pizza and sandwich trays should we make?

x = pizza and s = trays

Amount for feeding people: $16p + 8t = 64$
$6t = 64 - 16p$
Multiply each side by 2
$12t = 128 - 28p$

Substitute 120 - 28p for the 12 on account equation
$28p + 12t = 28p + 150$
$11p = 22$
$p = 2$
We need 2 pans of pizza

Account for the money: $28p + 12t = 150$

Machine 1: $y = 1.50x + 50$
Machine 2: $y = 2.00x + 10$

Machine 1 - Machine 2
$1.50x + 50 = 2.00x + 10$
$40 = .5x$
$80 = x$ — if both machines make 80 chickens, cost will be same

Need to make a square, unfolded box for watermelons. I have a large piece of cardboard that can be folded into a box. Box must have a volume of 1728 cubic inches. The total surface of the watermelon box should be 48 square feet. How big should the piece of cardboard be to make the box?

48 = 30w - 60w - 6l
16 = 1w - 60w - 6l
16 = -5w - 6l
$\frac{16}{-6} = \frac{-5w}{-6} - \frac{6l}{-6}$
$-\frac{16}{6} = \frac{5w}{6} + l$
$-\frac{16}{6} = \frac{5}{6}w + l$
$-\frac{16}{6} = \frac{5}{6}(-\frac{16}{5}) + l$
$-\frac{16}{6} = -\frac{16}{6} + l$
$0 = l$
Cardboard piece should be 18 feet by 18 feet

A car accidently crashed into our front column made of bricks. We are going to replace it with brick that are 2" x 4" x 8". How many bricks do we need for each cube foot of the column?

$1,728$ inches$^3 * 12^{-3} * 12^{-3} = 1$
What's the volume of each brick?
64 inches$^3 = 2" * 4" * 8"$
How many bricks do we need to order?
$1,728$ inches$^3 = 27$ bricks
64 inches^3

Mom buys a frozen casserole and a small egg for sam. 6% Sales tax is only applied to non-food items. Receipt is smudged. Mom's total was 12.13 and sales tax is $0.01! How much did the casserole cost?

x is price of the egg
.6x is price of casserole

$\frac{x}{.06} = \frac{0.01}{1}$
$x = 50.018$
Tax half cent. 50 cents

$6x = 51.8$
$x = 50.30$
Tax half cent. 50 cents

$x + .06x = 12.13$
$1.06x = 12.13$
$x = 11.44$
Casserole 11.44, $1

Subway is growing up for opening day. Sandwich shop employee needs to make cuts to be fifteen inch footlong sandwiches and 12000 more than twice the sales cuts. The employee cuts, alternating, etc, will run about 20% of fifteen cuts. What are Subway's needs cuts?

x = weekly cuts (Sales + materials + overhead)
0.20x = 20% of fifteen cuts, which are also twice cuts
x = 2x + 12000 + 0.20x — Sales + overhead + 20% cuts
0.20x = 20% of the direct labor costs + weekly overhead cuts

$x = (\text{Labor Costs} + \text{Fixed Costs}) + (\text{Overhead Costs})$
$x = 0.5x + 2(0.5x) + 12000 + 0.20(0.5x)$
$x = 0.5x + 1x + 12000 + 0.1x$
$x = 0.5x + 0.6x + 0.06x + 12000$
$x = 1.16x + 12000$
$-0.16x = 12000$
$x = -75,000$
Total weekly costs are 75,000
Fixed costs are 12,000 (Rent, Utilities, etc)
Overhead cost 12,000 (Supervisor salary, etc)
Weekly overhead costs are 12,000/12 (Rent, Utilities, etc)
Weekly overhead costs are 12,000/12 (Rent, Utilities, etc)
A week cap 12,12,000/12,12,000/12,12,000

You can make ~100 sandwiches per an hour (Fifty sandwiches per 30 minutes). Sales are 2000 per week. You get paid $800.20 every two weeks. How many sandwiches do you need to make to earn 2,100,000?

$\frac{2,100,000}{2400} = 237.99$
Pay per week = $\frac{800.20}{2}$
Pay per week = 400.10
Sandwiches per week = $100 * 40$
Sandwiches per week = 4,000
238 weeks * 7,400 = 1,761,200

Walmart has a sale on maps. Get buy one map for $12.25 or buy 2 maps for $20. They sold 800 maps during the sale. Mary's Map Shop is a local map shop. How many shoppers took advantage of the 2 map deal?

x = the shoppers buying two maps
2x = 2 maps bought in the 2 map deal
800 - 2x = 2 maps bought in the single map deal

$12.25x + 12.25(800 - 2x) = 19840$
How many shoppers took advantage of the 2 map deal?
How much of the liquid should be poured into the mixture?

$12(20) + 12(800 - 2x) = 19840$
$20x + 510,560 - 24x = 19840$
$-4x = -5720$
$x = 180$
180 shoppers took advantage of the 2 for $20 deal

Walmart's rent per square foot is $12.25 per year. Our store is 12,000 square feet. Our yearly rent is $147,000. Our monthly rent is $12,250. Our weekly rent is $2,800. How many square feet can we fit in our store?

$\frac{147,000}{12} = 12,250$
$\frac{12,250}{4} = 3,062.5$
$\frac{3,062.5}{7} = 437.5$
Our store is 437.5 square feet

Walmart's rent per square foot is $12.25 per year. Our store is 437.5 square feet. Our yearly rent is $5,359.375. Our monthly rent is $446.61. Our weekly rent is $102.92. How many feet can we fit in our store?

$\frac{5,359.375}{12} = 446.61$
$\frac{446.61}{4} = 111.65$
$\frac{111.65}{7} = 15.95$
Our store is 15.95 square feet

Cost to make each cookie is 1.12. Cost to make 1000 cookies is 1,120. Cost to make 2000 cookies is 2,240. Cost to make 3000 cookies is 3,360. Cost to make 4000 cookies is 4,480. Cost to make 5000 cookies is 5,600. Cost to make 6000 cookies is 6,720. Cost to make 7000 cookies is 7,840. Cost to make 8000 cookies is 8,960. Cost to make 9000 cookies is 10,080. Cost to make 10000 cookies is 11,200.

Profit = Sales Costs - Profit - Sales - 10,000 - 11,200 = profit = 1,200 profit

Cost to make 1000 cookies is 1,120. Cost to make 2000 cookies is 2,240. Cost to make 3000 cookies is 3,360. Cost to make 4000 cookies is 4,480. Cost to make 5000 cookies is 5,600. Cost to make 6000 cookies is 6,720. Cost to make 7000 cookies is 7,840. Cost to make 8000 cookies is 8,960. Cost to make 9000 cookies is 10,080. Cost to make 10000 cookies is 11,200.

Profit = Sales Costs - Profit - Sales - 10,000 - 11,200 = profit = 1,200 profit

Walmart is placing an order for 4,200 T-shirts. Each box holds 12 T-shirts. How many boxes do we need to order? Each box is only medium or small. How many of each should we send to Walmart?

x = the number of small shirts
y = the number of medium shirts
z = the number of large shirts

$x + 2x + 3x = 4200$
$6x = 4200$
$x = 700$
Send 700 small T-shirts

Target and Walmart offering same basic T-shirt. Walmart's price is 1.25 times Target's price. Walmart's price is $4.50. What is Target's price?

Walmart = 560 * 1.25x = 544.44
(0% when x = 1.9)

Target = 560 * 1.35x = 544.44
(0% when x = 1.9)

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$x = 700$
Send 700 small T-shirts

Demand for coke products vary inversely based on price. When price is $1.75 for a coke, weekly sales are 1,050. What would the weekly demand be at 50 per coke?

d = demand and p = price, vary inversely

$\frac{d}{p} = \frac{d}{p}$
$\frac{1050}{1.75} = \frac{d}{50}$
$\frac{1050 * 50}{1.75} = d$
$d = 859$ cases
demand if price is 50

A pizzeria at noon temperature is 20°C. Oven is turned on at 1 pm. At 1:5pm, the temperature is 200°C. Also assumed there takes out at 100°C. When should I have them take out of the oven?

We have two points (0, 20) and (60, 150)
Multiply everything by 60
(To isolate an equation)

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{y - y_1}{x - x_1}$
$\frac{150 - 20}{60 - 0} = \frac{y - 20}{x - 0}$
$\frac{130}{60} = \frac{y - 20}{x}$
$\frac{130}{60}x = y - 20$
$\frac{130}{60}x + 20 = y$
$\frac{130}{60}x + 20 = 100$
$\frac{130}{60}x = 80$
$x = 36$ minutes

Different scales for a pizza

$\frac{100}{12} = \frac{x}{8}$
$\frac{100 * 8}{12} = x$
$\frac{800}{12} = x$
$\frac{200}{3} = x$
$66\frac{2}{3} = x$

Pizzeria makes 12" inch pizzas. Customer wants to know how many square inches? Can I not have?

x = number of small dinners
y = number of chicken dinners

$1 * x + 2 * y = 2350$
$x + 2y = 2350$
$-x - x$
$2y = 2350 - x$
$\frac{2y}{2} = \frac{2350}{2} - \frac{x}{2}$
$y = 1175 - \frac{x}{2}$
$y = 1175 - \frac{x}{2}$
$y = 1175