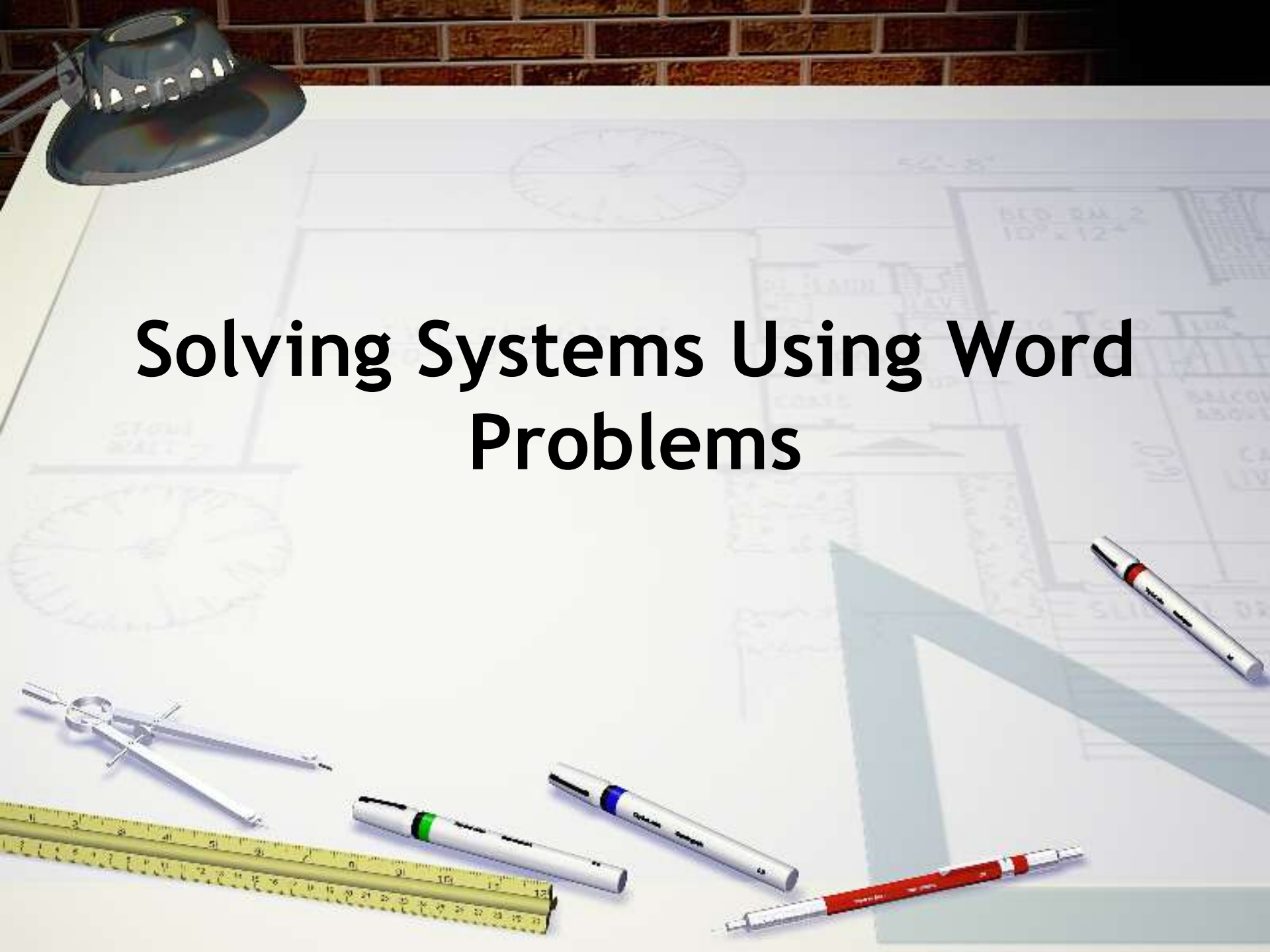
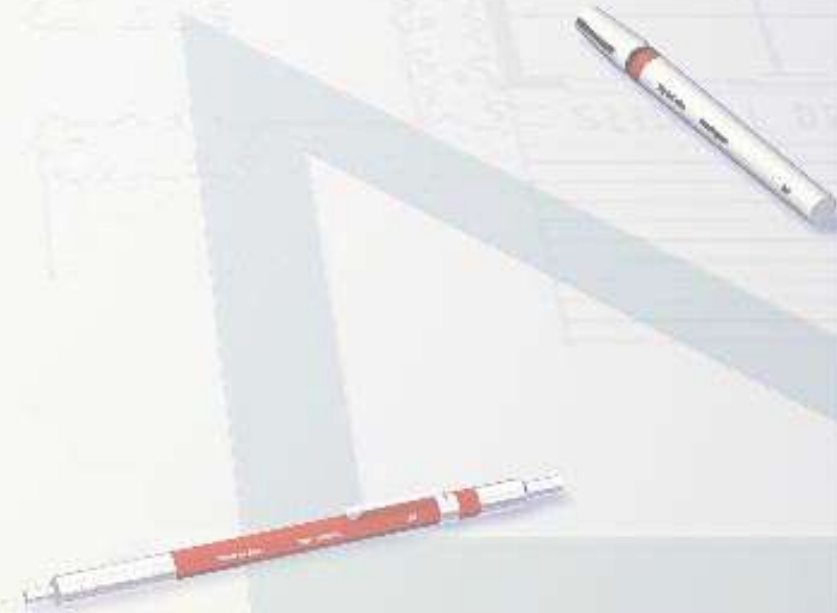


The background of the slide is a detailed architectural drawing of a house floor plan. A desk lamp is positioned in the top left corner, casting light on the drawing. Various drafting tools are scattered across the bottom half of the image, including a large set square, a compass, a yellow ruler, and several markers. The title text is centered over the middle of the drawing.

Solving Systems Using Word Problems



Objectives

- Use reading strategies to write formulas
 - Solve the equations using substitution or elimination
- 



Steps to Follow

- 1. Identify Variables
 - 2. Write 2 equations
 - (Use key words and reading strategies to help)
 - 3. Solve using substitution or elimination
 - 4. Write answer in a complete sentence
- 
- 



Example 1

Kevin would like to buy 10 bouquets. The standard bouquet costs \$7, and the deluxe bouquet costs \$12. He can only afford to spend \$100. How many of each type can he buy?

Define Variables:

X: standard bouquet

Y: deluxe bouquet

Equation 1 Cost:

$$7x + 12y = 100$$

Equation 2 Bouquets :

$$x + y = 10$$



Solution: (4,6)



Example 2

A hot air balloon is 10 meters above the ground and rising at a rate of 15 meters per minute. Another balloon is 150 meters above the ground and descending at a rate of 20 meters per minute. When will the two balloons meet?

Define Variables:

x =minutes

y =height in meters

Equation 1

$$y=15x+10$$

Equation 2

$$y=-20x+150$$



Solution: (4,70)



Example 3

A group of 3 adults and 10 students paid \$102 for a cavern tour. Another group of 3 adults and 7 students paid \$84 for the tour. Find the admission price for an adult ticket and a student ticket.

Define Variables:

x = adult ticket price

y = student ticket price

Equation 1

$$3x + 10y = 102$$

Equation 2

$$3x + 7y = 84$$



Solution (14,6)



Example 4

Melissa and Frank were jogging. Melissa had a 2 mile head start on Frank. If Melissa ran at an average rate of 5 miles per hour and Frank ran at an average rate of 8 miles per hour, how long would it take for Frank to catch up with Melissa?

Define Variables:

x =hours

y =miles

Equation 1

$$y=5x+2$$

Equation 2

$$y=8x$$



Solution (2/3, 5 1/3)



Example 5

An Algebra Test contains 38 problems. Some of the problems are worth 2 points each. The rest of the questions are worth 3 points each. A perfect score is 100 points. How many problems are worth 2 points? How many problems are worth 3 points?

Define Variables:

x = 2 pt. questions

y = 3 pt. questions

Equation 1

$$x + y = 38$$

Equation 2

$$2x + 3y = 100$$



Solution (14,24)



Example 6

Ashley has \$9.05 in dimes and nickels. If she has a total of 108 coins, how many of each type does she have?

Define Variables

x =dimes

y =nickels

Equation 1

$$x+y=108$$

Equation 2

$$.10x+.05y=9.05$$



Solution (73,35)



Example 7

The perimeter of a parking lot is 310 meters. The length is 10 more than twice the width. Find the length and width. (Remember: $P=2L+2W$)

Define Variables

L =length

W =width

Equation 1

$$2L+2W=310$$

Equation 2

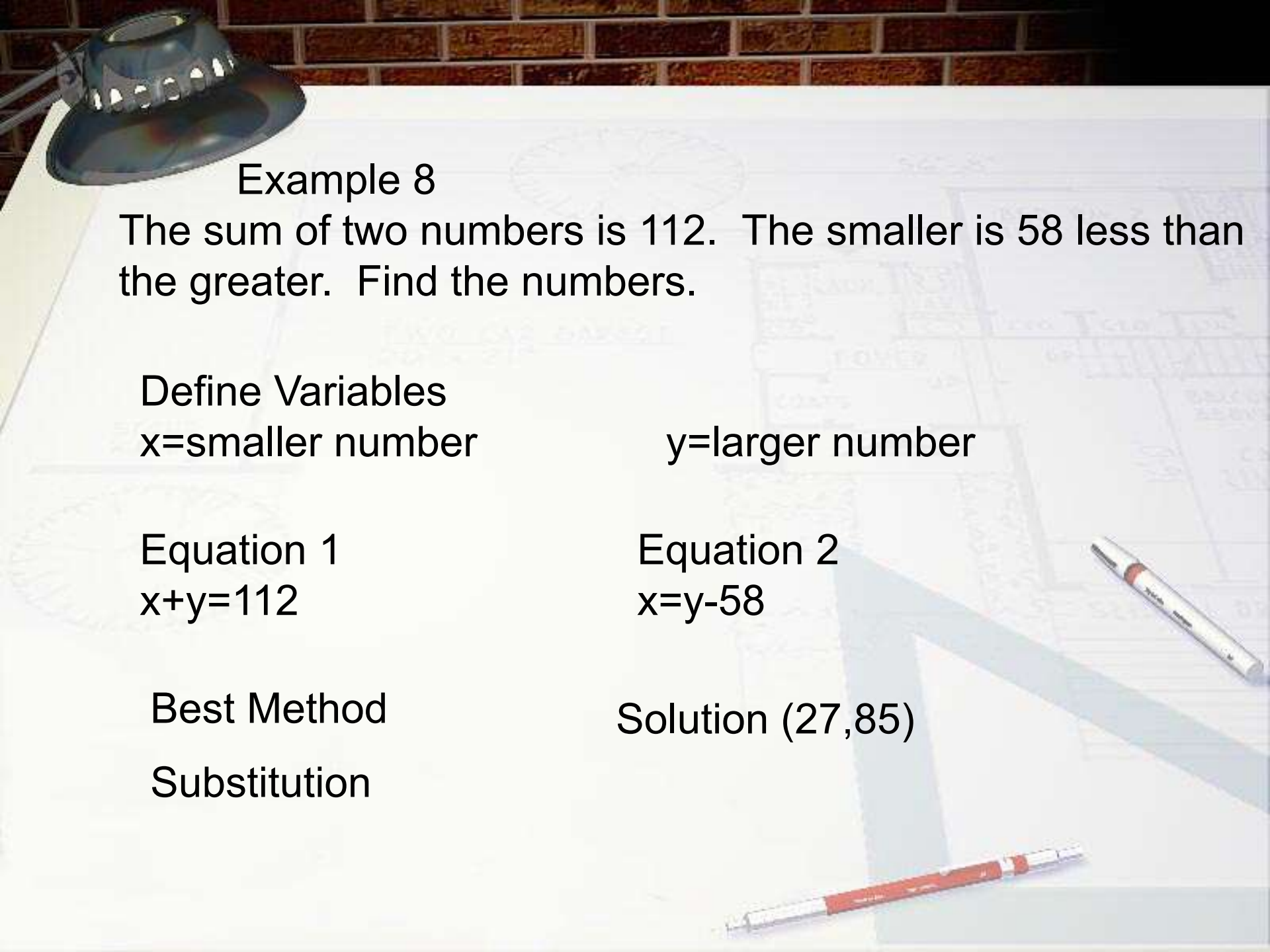
$$L=2W+10$$

Best Method

Substitution

Solution ($106 \frac{2}{3}$, $48 \frac{1}{3}$)





Example 8

The sum of two numbers is 112. The smaller is 58 less than the greater. Find the numbers.

Define Variables

x =smaller number

y =larger number

Equation 1

$$x+y=112$$

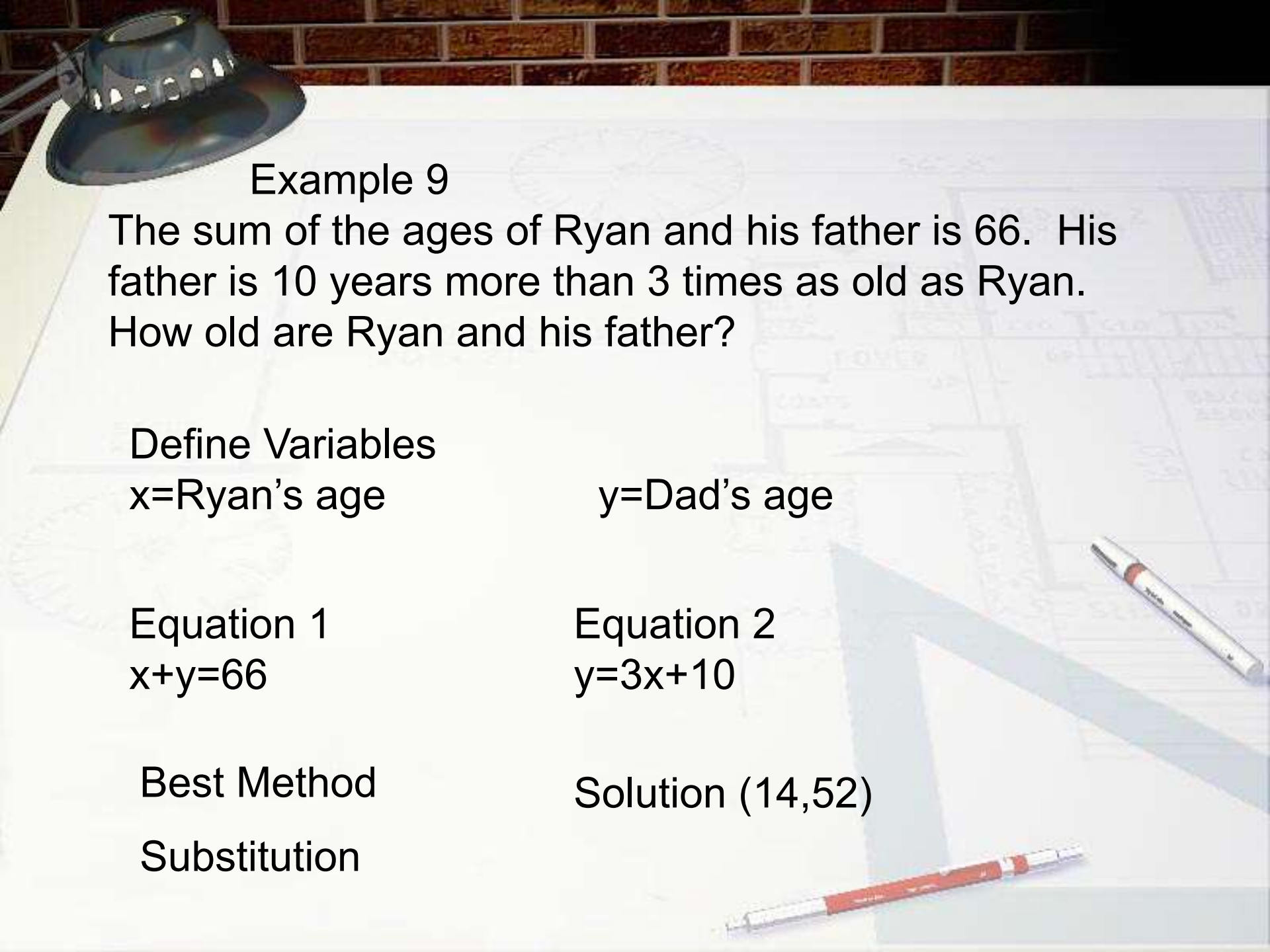
Equation 2

$$x=y-58$$

Best Method

Substitution

Solution (27,85)



Example 9

The sum of the ages of Ryan and his father is 66. His father is 10 years more than 3 times as old as Ryan. How old are Ryan and his father?

Define Variables

x = Ryan's age

y = Dad's age

Equation 1

$$x + y = 66$$

Equation 2

$$y = 3x + 10$$

Best Method

Substitution

Solution (14, 52)



Example 10

A total of \$10,000 is invested in two funds, Fund A and Fund B. Fund A pays 5% annual interest and Fund B pays 7% annual interest. The combined annual interest is \$630. How much of the \$10,000 is invested in each fund?

Define Variables

a = Fund A

b = Fund B

Equation 1

$$a + b = 10,000$$

Equation 2

$$.05a + .07b = 630$$

Best Method

Substitution

Solution (6500, 3500)





Example 11

We need to rent a large truck for one week. Rental companies charge an initial cost plus an additional cost for each mile driven. One company, Paenz, will rent a 27 foot truck for us for \$525 plus \$0.21 per mile. Another company, Opan, will rent us the same size truck for \$585 plus \$0.13 per mile.

Define Variables

x =miles

y =total cost

Equation 1

$$y=0.21x+525$$

Equation 2

$$y=0.13x+585$$

Best Method

Solution (750,682.50)

Substitution





Example 12

The larger of two numbers is 7 less than 8 times the smaller. If the larger number is decreased by twice the smaller, the result is 329. Find the two numbers.

Define Variables

x =smaller number

y =larger number

Equation 1

$$y=8x-7$$

Equation 2

$$y-2x=329$$

Best Method

Substitution

Solution (56,441)

