

ALG IIA WORD PROBLEM PACKET NAME _____

- ☺ Solve each problem algebraically.
- ☺ Define the variable, write an equation, and solve.
- ☺ Label answers when possible. No guess and check.
- ☺ You will need this packet for the entire semester. Do not lose it!

NUMBER

HINTS: x increased by 2: $x + 2$
x decreased by 2: $x - 2$
x less 2: $x - 2$
x less than 2: $2 - x$

the product of 2 and x: $2x$
twice x: $2x$

one-half of x: $\frac{1}{2}x$ or $\frac{x}{2}$

the quotient of x and 2: $\frac{x}{2}$

(1) Five increased by four times a number is 29. Find the number.

(2) One-half a number, decreased by 9, equals the product of five and the number. Find the number.

(3) 20 less than twice a number equals the number less 4. Find the number.

(4) The quotient of a number and 3 equals 7 less than twice the number. Find the number.

(5) The second of three numbers is 6 more than the first, and the third is 7 times the second. If the third number is 12 more than 10 times the first number, find the three numbers.

(6) A company's sales were \$15,000 for a three-month period. Sales for the second month were \$2,000 more than the first month's sales. The third month's sales were three times those of the second year. Find the sales amount for each month.

(7) The second of three numbers is twice the first and the third is 4 less than the second. The 1st number less the 3rd number is -3. Find the numbers.

(8) A company's profits for February increased \$400 over its January profits. The March profits were twice the February figure. If the profit total was \$8800 for the three months, find the profit figure for each month.

CONSECUTIVE INTEGERS & MULTIPLES

HINTS: consecutive integers (1, 2, 3, . . .): $x, x + 1, x + 2, x + 3$, etc.
consecutive even integers (2, 4, 6, . . .): $x, x + 2, x + 4$, etc.
consecutive odd integers (1, 3, 5, . . .): $x, x + 2, x + 4$, etc.
multiples of 3 (3, 6, 9, . . .): $x, x + 3, x + 6$, etc.
multiples of 8 (8, 16, 24, . . .): $x, x + 8, x + 16$, etc.

(9) Find three consecutive integers so that 25 more than the second is equal to the product of 5 and the third.

(10) Find three consecutive even integers such that the sum of the first two is 22 more than the third.

(11) Find three consecutive odd integers such that 6 times the second, decreased by the third, is 363.

(12) Find three consecutive multiples of 5 for which the sum of the first and second multiples is 20 more than the third multiple.

(13) Find 4 consecutive integers such that 30 more than twice the 2nd is the same as the product of 3 and the largest.

(14) Find five consecutive multiples of 6 such that the sum of the first three multiples is 30 more than the fifth multiple.

(15) Find 4 consecutive even integers such that 4 times the largest decreased by the sum of the 1st and 2nd is 86.

(16) Find 5 consecutive multiples of 10 such that the sum of the 1st two multiples is 120 less than the sum of the 3rd, 4th and 5th multiples

(17) Find 4 consecutive odd integers such that 3 times the 2nd decreased by the third is 32.

(18) Find three consecutive multiples of 4 such that twice the third multiple is 32 less than the product of 3 and the second multiple.

PERCENT OF INCREASE & DECREASE

HINTS: $\frac{\% \text{ of increase}}{100} = \frac{\text{increase}}{\text{original price}}$

$\frac{\% \text{ of decrease}}{100} = \frac{\text{decrease}}{\text{original price}}$

(19) A price increased from \$30 to \$50.
Find the percent of increase.

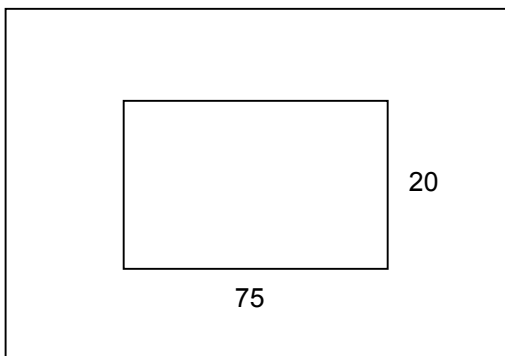
(20) A price decreased from \$25 to \$10.
Find the percent of decrease.

(21) Margo purchased a coat for \$122.50. The coat originally sold for \$98. What was the percent of increase?

(22) Andy bought a stereo set for \$138 that originally was sold for \$230. What was the percent of decrease?

RECTANGLE/BORDER

(ex) A walkway of uniform width was built around a rectangular garden that measures 75 feet by 20 feet. If the perimeter of the garden with the walkway is 222 feet, find the width of the walkway.



x: width of walkway.

$$2(2x + 75) + 2(2x + 20) = 222$$

$$4x + 150 + 4x + 40 = 222$$

$$8x + 190 = 222$$

$$8x = 32$$

$$x = 4 \text{ feet}$$

(23) A walkway of uniform width was built around a rectangular garden that measures 90 ft by 25 ft. If the perimeter of the garden with the walkway is 250 feet, find the width of the walkway.

(24) Linda placed a border of equal width on a picture that is 8 in. wide and 10.5 in. long. If the perimeter of the picture with the border is 61 in., find the width of the border.

(25) A walkway of uniform width was built around a rectangular pond that measures 30 ft by 15 ft. If the perimeter of the pond with the walkway is 130 feet, find the width of the walkway.

(26) Ed placed a border of equal width on a poster that is 7 in. wide and 13.5 in. long. If the perimeter of the poster with the border is 77 in., find the width of the border.

AREA AND PERIMETER

(27) The length of a rectangle is 12 cm more than the width. The perimeter is 44 cm. Find the length, width and area of the rectangle.

(28) The second side of a triangle is 4 cm longer than the first side. The third side is twice the length of the second. What is the length of each side if the perimeter is 96 cm?

(29) The length of the Smiths' rectangular living room is 1m less than twice its width. The perimeter of the room is 22 m. Find the dimensions and the area of the room.

(30) The lengths of a triangle are in the ratio of 4 to 7 to 10. What is the length of each side if the perimeter is 189 yards? (Hint: use $4x$, $7x$ and $10x$ for the lengths)

(31) The length of a rectangle is 5 ft. more than 3 times the width. The perimeter is 98 feet. Find the length, width and area of the rectangle.

(32) The width of a rectangle is 2 inches shorter than one-half the length. The perimeter is 57.2 inches. Find the length, width and area of the rectangle.

(33) The lengths of the sides of a quadrilateral are in the ratio of 2 to 3 to 5 to 6. What is the length of each side if the perimeter is 104 feet?

(34) One leg of a right triangle is 2 cm longer than twice the length of the other leg. The hypotenuse is 1 cm longer than the longer leg. The perimeter is 30 cm. Find the length of all 3 sides and the area of the right triangle.

AGE

(ex) Ed is 4 times as old as his niece, Selma. Ten years from now, he will be twice as old as she will be. How old is each now?

	Now	10 Later
Ed	$4x$	$4x + 10$
Selma	x	$x + 10$

$$4x + 10 = 2(x + 10)$$

$$4x + 10 = 2x + 20$$

$$2x = 10$$

$$x = 5$$

Ed is $4 \cdot 5 = 20$
Selma is 5

(ex) Byron is 2 years younger than Cindy. Eight years ago, the sum of their ages was 14. Find their present ages.

	Now	8 Ago
Byron	$x - 2$	$x - 2 - 8$
Cindy	x	$x - 8$

$$x - 2 - 8 + x - 8 = 14$$

$$2x - 18 = 14$$

$$2x = 32$$

$$x = 16$$

Byron is $16 - 2 = 14$
Cindy is 16

(35) Barney is 5 years older than Betty. In 9 years the sum of their ages will be 91. Find their ages now.

(36) Raymond is 12 years younger than Susan. Four years ago, Susan was 4 times as old as Raymond was. Find their present ages.

(37) An oak tree is 20 years older than a pine tree. In eight years, the oak will be 3 times as old as the pine. How old is each now?

(38) Fred is 3 years older than Wilma. Three years ago the sum of their ages was 75. Find their ages now.

(39) Marge is 3 years younger than Homer. In 7 years the sum of their ages will be 63. What are their ages now?

(40) An eagle is 4 times as old as a falcon. Three years ago, the eagle was 7 times as old as the falcon. Find the present age of each bird.