Name _____ Date _____

8A: Algebra 1 Period _____

Word Problem Test Review

1) DJ Joe wants to organize 127 CD's into storage boxes. Each storage box can hold a maximum of 10 CD's. What is the least number of storage boxes needed?

(a) 10 (b) 11 (c) 12 (d) 13

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2) Explain why x and $x + 1$ cannot represent two consecutive odd integers.

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3) If x represents an integer, then the next consecutive integer in terms of x is

(a) x (b) $x + 1$ (c) $x + 2$ (d) $x + 3$

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4) If $x - 8$ represents an even integer, then the next consecutive even integer in terms of x is

(a) $x - 10$ (b) $x - 9$ (c) $x - 7$ (d) $x - 6$

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5) If $x + 2$ represents an even integer, then the next consecutive odd integer in terms of x is

(a) $x + 1$ (b) $x + 3$ (c) $x + 4$ (d) $x + 5$

Write a legend, equation, solution, and check for problems #6 - #20.

6) A Cell Phone Company advertises service for 3 cents per minute plus a monthly fee of $29.95. If Tom's phone bill for October was $38.95, find the number of minutes he used.

7) Zoe is comparing two local yoga programs. Yoga-Weigh charges $90 a month and a registration fee of $35. Essence of Yoga charges $80 per month with a $75 registration fee. After how many months will the two schools charge the same amount?

8) Five times a number equals 2 times the number increased by nine. Find the number.

9) The second of three numbers is six more than the first. The third number is twice the first. The sum of three numbers is 26. Find the numbers.

10) Find three consecutive integers such that the sum of twice the second and three times the third is five less than six times the first.

11) If four times a number is increased by 17, the result is the same as when 89 is decreased by 8 times the number. Find the number.

12) Find three consecutive odd integers such that eight more than the sum of the first two is equal to eleven less than three times the third.

13) Mary has an older sister and a younger sister. Her older sister is one year more than twice Mary's age. Mary's younger sister is three years younger than she is. The sum of their three ages is 26. Find Mary's age.

14) Mark is six years older than Diane. If 5 times Diane's age is subtracted from 7 times Mark's age, the difference is 60 years. Find the age of each person.

15) Mike's age is three years more than twice his younger brother's age. If the sum of their ages is at most 18, then find the greatest age that Mike's brother can be.

16) Three brothers have ages that are consecutive odd integers. Find the ages if the sum of the age of the youngest and three times the age of the oldest is five less than five times the middle brother's age.

17) The length of a rectangle is 5 meters more than its width. The perimeter is 66 meters. Find the dimensions of the rectangle.

18) The length of a rectangle is 6 meters less than 4 times its width. If the perimeter of the rectangle is at most 120 meters, find the greatest possible width of the rectangle.

19) Our math class collected $1.30 in nickels and dimes for a class breakfast. If there is a total of 17 coins, how many coins of each kind were there?

20) In a girl's piggy bank, there is a collection of nickels, dimes, and quarters that amount to $3.20. There are three times as many quarters as nickels, and 5 more dimes than nickels. How many coins of each kind are there?

Name Key
8A: Algebra 1

Date _____
Period _____

Word Problem Test Review

1) DJ Joe wants to organize 127 CD's into storage boxes. Each storage box can hold a maximum of 10 CD's. What is the least number of storage boxes needed?

(a) 10 (b) 11 (c) 12 (d) 13

not enough $\frac{127}{10} = 12.7$

L	I
let x = # of Storage boxes Needed	$\frac{10}{10}x \geq \frac{127}{10}$ $x \geq 12.7$

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2) Explain why x and x + 1 cannot represent two consecutive odd integers.

ODD integers increase by 2 (or have a difference of 2 between them) these only increase by 1.

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3) If x represents an integer, then the next consecutive integer in terms of x is

(a) x (b) x + 1 (c) x + 2 (d) x + 3

add 1

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4) If x -8 represents an even integer, then the next consecutive even integer in terms of x is

(a) x - 10 (b) x - 9 (c) x - 7 (d) x - 6

add 2

$x - 8$
$+2$
$x - 6$

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5) If x + 2 represents an even integer, then the next consecutive odd integer in terms of x is

(a) x + 1 (b) x + 3 (c) x + 4 (d) x + 5

*even to odd, you only add 1

$x + 2$
$+1$
$x + 3$

ex $x + 2$
$2 + 2$
$4 \rightarrow 5$
$+1$

Write a legend, equation, solution, and check for problems #6 - #20.

6) A Cell Phone Company advertises service for 3 cents per minute plus a monthly fee of $29.95. If Tom's phone bill for October was $38.95, find the number of minutes he used.

L	E	S	C
let x = the # of minutes he used	$.03x + 29.95 = 38.95$ $-29.95 \quad -29.95$ $\frac{.03x}{.03} = \frac{9}{.03}$ $x = 300$	Tom used 300 minutes	$300(.03) = \$9$ $9 + 29.95 = 38.95$ ✓

7) Zoe is comparing two local yoga programs. Yoga-Weigh charges $90 a month and a registration fee of $35. Essence of Yoga charges $80 per month with a $75 registration fee. After how many months will the two schools charge the same amount?

L	E	S	C
let x = the # of months the two schools charge the same	$90x + 35 = 80x + 75$ $-80x \quad -80x$ $10x + 35 = 75$ $-35 \quad -35$ $\frac{10x}{10} = \frac{40}{10}$ $x = 4$	After 4 months, the two schools will charge the same amount	$90(4) = 360$ $360 + 35 = 395$ $80(4) = 320$ $320 + 75 = 395$ ✓

8) Five times a number equals 2 times the number, increased by nine. Find the number.

L	E	S	C
let x = the #	$5x = 2x + 9$ $-2x \quad -2x$ $\frac{3x}{3} = \frac{9}{3}$ $x = 3$	The number is 3	$5(3) = 15$ $2(3) = 6$ ✓ $6 + 9 = 15$

9) The second of three numbers is six more than the first. The third number is twice the first. The sum of three number is 26. Find the numbers.

L

Let
X = the first #
X+6 = the second #
2X = the third #

E

$X+X+6+2X = 26$

$4X+6 = 26$

$-6 \quad -6$

$\frac{4X}{4} = \frac{20}{4}$

$X = 5$

$X+6 = 11$

$2X = 10$

S

The first number is 5, the second number is 11 & the third number is 10.

C

$5+6 = 11$ ✓

$2(5) = 10$ ✓

$5+11+10 = 26$ ✓

10) Find three consecutive integers such that the sum of twice the second and three times the third is five less than six times the first.

L

Let
X = 1st CI
X+1 = 2nd CI
X+2 = 3rd CI

E

$2(x+1)+3(x+2) = 6x-5$

$2x+2+3x+6 = 6x-5$

$5x+8 = 6x-5$

$-5x \quad -5x$

$8 = x-5$

$+5 \quad +5$

$13 = x$

$X = 13$

$X+1 = 14$

$X+2 = 15$

S

The three consecutive integers are 13, 14 & 15

C

$2(14) = 28$

$3(15) = 45$

$28+45 = 73$

$6(13) = 78$ ✓

$78-5 = 73$

11) If four times a number is increased by 17, the result is the same as when 89 is decreased by 8 times the number. Find the number.

L

let
x = the #

E

$4x+17 = 89-8x$

$+8x \quad +8x$

$12x+17 = 89$

$-17 \quad -17$

$\frac{12x}{12} = \frac{72}{12}$

$x = 6$

S

The number is 6.

C

$4(6) = 24$

$24+17 = 41$

$8(6) = 48$ ✓

$89-48 = 41$

12) Find three consecutive odd integers such that eight more than the sum of the first two is equal to eleven less than three times the third.

L

Let
x = 1st COI
$x+2$ = 2nd COI
$x+4$ = 3rd COI

E

$(x+x+2)+8 = 3(x+4)-11$
$x+x+2+8 = 3x+12-11$
$2x+10 = 3x+1$
$-2x \quad -2x$
$10 = x+1$
$-1 \quad -1$
$9 = x$

$x = 9$
$x+2 = 11$
$x+4$ 13

S

The 3 COI's are 9, 11, 13

C

$9+11 = 20$
$20+9 = 28$
$3(13) = 39$ ✓
$39-11 = 28$

13) Mary has an older sister and a younger sister. Her older sister is one year more than twice Mary's age. Mary's younger sister is three years younger than she is. The sum of their three ages is 26. Find Mary's age.

L

Let
x = Mary age
$2x+1$ = Mary older sister
$x-3$ = Mary younger sister

E

$x+2x+1+x-3 = 26$
$4x-2 = 26$
$+2 \quad +2$
$4x = 28$
$\frac{4x}{4} = \frac{28}{4}$
$x = 7$
$2x+1 = 15$
$x-3 = 4$

S

Mary is 7 years old

C

$2(7) = 14$
$14+1 = 15$ ✓
$7-3 = 4$ ✓
$7+15+4 = 26$ ✓

14) Mark is six years older than Diane. If 5 times Diane's age is subtracted from 7 times Mark's age, the difference is 60 years. Find the age of each person.

L

Let
x = Diane's age
$x+6$ = Mark's age

E

$7(x+6)-5x = 60$
$7x+42-5x = 60$
$2x+42 = 60$
$-42 \quad -42$
$2x = 18$
$\frac{2x}{2} = \frac{18}{2}$
$x = 9$
$x+6 = 15$

S

Diane is 9 yrs old
&
Mark is 15 yrs old

C

$9+6 = 15$ ✓
$5(9) = 45$
$7(15) = 105$
$105-45$ 60 ✓

15) Mike's age is three years more than twice his younger brother's age. If the sum of their ages is at most 18, then find the greatest age that Mike's brother can be.

L

Let
x = mike's younger brothers age

$2x+3$ = Mike's age

E

$x+2x+3 \leq 18$

$3x+3 \leq 18$

$-3 \quad -3$

$\frac{3x}{3} \leq \frac{15}{3}$

$x \leq 5$

$2x+3 \leq 13$

S

The greatest age Mike's brother can be is 5 yrs old

C

$2(5)=10$

$10+3=13$

$5+13=18$

$18 \leq 18$ ✓

$2(6)=12$

$12+3=15$

$12+15=27$

$27 \not\leq 18$

16) Three brothers have ages that are consecutive odd integers. Find the ages if the sum of the age of the youngest and three times the age of the oldest is five less than five times the middle brother's age.

L

Let
x = youngest brothers age

$x+2$ = middle brothers age

$x+4$ = oldest brothers age

E

$x+3(x+4) = 5(x+2)-5$

$x+3x+12 = 5x+10-5$

$4x+12 = 5x+5$

$-4x \quad -4x$

$12 = x+5$

$-5 \quad -5$

$7 = x$

$x = 7$

$x+2 = 9$

$x+4 = 11$

S

The youngest brother is 7 yrs old, the middle brother is 9 yrs old & the oldest brother is 11 yrs old

C

$3(11)=33$

$7+33=40$

$5(9)=45$ ✓

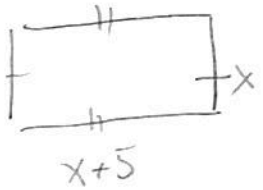
$45-5=40$

17) The length of a rectangle is 5 meters more than its width. The perimeter is 66 meters. Find the dimensions of the rectangle.

L

Let
x = the width of the rectangle

$x+5$ = the length of the rectangle



E

$x+x+x+5+x+5 = 66$ OR

$2(x)+2(x+5)=66$

$2x+2x+10=66$

$4x+10=66$

$-10 \quad -10$

$\frac{4x}{4} = \frac{56}{4}$

$x = 14$

$x+5 = 19$

S

The width is 14 meters & the length is 19 meters

C

$14+5=19$ ✓

$14+14+19+19=66$ ✓

18) The length of a rectangle is 6 meters less than 4 times its width. If the perimeter of the rectangle is at most 120 meters, find the greatest possible width of the rectangle.

L

Let
x = the width of a rectangle
$4x-6$ = the length of a rectangle

E

$x+x+4x-6+4x-6 \leq 120$ OR 2

$2(x) + 2(4x-6) \leq 120$
$2x + 8x - 12 \leq 120$
$10x - 12 \leq 120$
$+12 \quad +12$
$\frac{10x}{10} \leq \frac{132}{10}$
$x \leq 13.2$
$4x-6 \leq 46.8$

S

The greatest possible width of the rectangle is 13.2 meters

* greatest length would be 46.8m

C

$13.2+13.2+46.8+46.8=120$

$120 \leq 120$ ✓

$14+14+50+5=128$
$129 \nleq 120$
X no

19) Our math class collected $1.30 in nickels and dimes for a class breakfast. If there is a total of 17 coins, how many coins of each kind were there?

L

Let
x = # of dimes
$17-x$ = # of nickels

$.10(x)$ = total value of dimes

$.05(17-x)$ = total value of nickels

E

$.10(x) + .05(17-x) = 1.30$
$.10x + .85 - .05x = 1.30$
$.05x + .85 = 1.30$
$-.85 \quad -.85$
$\frac{.05x}{.05} = \frac{.45}{.05}$
$x = 9$
$17-x = 8$

S

There were 9 dimes & 8 nickels

C

$.10(9) = .90$
$.05(8) = +.40$
1.30 ✓

$9+8=17$ ✓

20) In a girl's piggy bank, there is a collection of nickels, dimes, and quarters that amount to $3.20. There are three times as many quarters as nickels, and 5 more dimes than nickels. How many coins of each kind are there?

L

Let
x = # of nickels
$3x$ = # of quarters
$x+5$ = # of dimes

$.05(x)$ = total value of nickels

$.25(3x)$ = total value of quarters

$.10(x+5)$ = total value of dimes

E

$.05(x) + .25(3x) + .10(x+5) = 3.20$
$.05x + .75x + .10x + .5 = 3.20$
$.9x + .5 = 3.20$
$-.5 \quad -.5$
$\frac{.9x}{.9} = \frac{2.7}{.9}$
$x = 3$
$3x = 9$
$x+5 = 8$

S

There are 3 nickels, 9 quarters & 8 dimes

C

$.05(3) = .15$
$.25(9) = 2.25$
$.10(8) = .80$
$\$3.20$

$3(3) = 9$ ✓
$3+5=8$ ✓