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INTERAMERICAN CAMPUS
DEPARTMENT OF MATHEMATICS
MAT 0020
STUDY GUIDE

LINEAR EQUATIONS AND INEQUALITIES

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve.

1) $4(x + 7) - 3x = 10$

A) 3

B) 1

C) -18

D) 21

2) $-6y = -26 + 8$

A) -3

B) 26

C) 3

D) 29

3) $9b + 4 = 10 - 8b + 8b$

A) $-\frac{3}{2}$

B) $\frac{2}{3}$

C) $\frac{1}{22}$

D) $\frac{3}{2}$

Solve the equation. Clear fractions or decimals first.

4) $3(3x - 1) = 12$

A) 1

B) $\frac{13}{9}$

C) $\frac{5}{3}$

D) $\frac{11}{9}$

5) $\frac{1}{2}(4x - 10) = \frac{1}{3}(15x - 6)$

A) $\frac{1}{10}$

B) -10

C) 1

D) -1

6) $29(x - 116) = 58$

A) 114

B) 58

C) 118

D) 116

7) $3(2z - 4) = 5(z + 4)$

A) 8

B) 32

C) -8

D) 11

Determine if the following is an identity or contradiction.

8) $2x + 3 = 2(x + 3) + -3$

A) Identity

B) Contradiction

9) $4(x + 1) - 2 = 4x + 6$

A) Contradiction

B) Identity

Find the value of the variable that is not given.

10) $V = \frac{1}{3}Bh$; $V = 8$, $h = 2$

A) 16

B) 10

C) 4

D) 12

Solve the formula for the indicated variable.

11) $P = s_1 + s_2 + s_3$ for s_1

A) $s_1 = P - s_2 - s_3$

B) $s_1 = s_2 + s_3 - P$

C) $s_1 = P + s_2 + s_3$

D) $s_1 = s_2 + P - s_3$

Solve.

12) The sum of twice a number and 9 less than the number is the same as the difference between -41 and the number. What is the number?

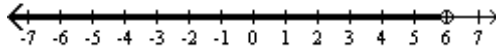
- A) -7 B) -16 C) -9 D) -8

Graph on a number line.

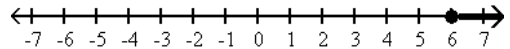
13) $x < 6$



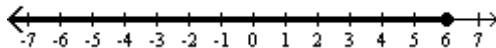
A)



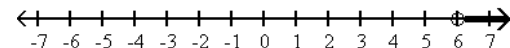
B)



C)

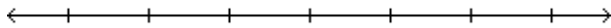


D)

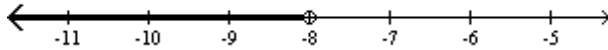


Solve the inequality, then graph the solution.

14) $10x + 8 > 2(4x - 4)$



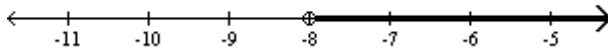
A) $x < -8$



B) $x \leq -8$



C) $x > -8$



D) $x \geq -8$



Solve.

15) A country club has two swimming pools. The bigger pool has a capacity of 71 more people than the smaller pool. If the combined capacity of the two pools is 115 people, how many people can the smaller pool take?

- A) 115 B) 71 C) 186 D) 22

Solve the problem.

16) From a point on a straight road, two cars are driven in opposite directions, one at 56 miles per hour and the other at 47 miles per hour. In how many hours will they be 515 miles apart?

- A) 6 hours B) 4 hours
C) Not enough information D) 5 hours

Solve.

17) Find the length of a rectangular lot with a perimeter of 132 meters if the length is 6 meters more than the width.

($P = 2L + 2W$)

- A) 36 m B) 30 m C) 66 m D) 72 m

- 18) How many ounces of a 20% saline solution must be added to 50 ounces of a 7% saline solution to make a 15% saline solution?
- A) 10 ounces B) 40 ounces C) 3 ounces D) 80 ounces
- 19) A writer received \$39,000 as royalty for her book. She invested part of the money in bonds paying 7% interest annually. The rest she invested in a life insurance policy which paid 9% annually. How much money did she invest in the bonds, if she expects to earn \$3210 from both investments each year?
- A) \$24,000 B) \$25,000 C) \$15,000 D) \$16,000
- 20) Kyle withdrew \$180 from an ATM machine in \$10 and \$20 bills. If he received a total of 14 bills, how many bill of each denomination did Kyle receive from the ATM machine?
- A) 10 \$10's and 4 \$20's B) 8 \$10's and 2 \$20's
C) 11 \$10's and 3 \$20's D) 13 \$10's and 1 \$20's