

## MATH 1010-2: QUIZ 3

September 9, 2010

**TO RECEIVE CREDIT FOR YOUR SOLUTIONS YOU MUST SHOW YOUR WORK.**

1. Solve the following inequality and graph your answer on the number line:

$$-2x + 3 \geq 7$$

**Solution.** We add  $-3$  to both sides of the inequality to obtain

$$-2x \geq 4$$

and then divide by  $-2$  (and flip the direction of the inequality since  $-2$  is negative!) to obtain our answer

$$x \leq -2.$$

The sketch of the solution is the region from  $-\infty$  to  $-2$  shaded with a square bracket  $]$  (or closed dot  $\bullet$ ) at  $-2$  on the number line.

2. The bill for the repair of an automobile is \$365. Included in the bill is a parts charge of \$275. The remainder of the bill is for labor. The charge for labor is \$30 per hour. How many hours were spent repairing the automobile?

**Solution.** Let  $x$  be the number of hours needed for the repair. The bill, including parts and labor, is then

$$275 + 30x.$$

Equating this with the total cost of 365 dollars, we get

$$275 + 30x = 365.$$

Solving for  $x$  we get

$$x = \frac{1}{30}(365 - 275) = \frac{90}{30} = 3.$$

Thus the repair took three hours.

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1. Solve the following inequality and graph your answer on the number line:

$$-2z + 3 \geq -7$$

**Solution.** We add  $-3$  to both sides of the inequality to obtain

$$-2z \geq -10$$

and then divide by  $-2$  (and flip the direction of the inequality since  $-2$  is negative!) to obtain our answer

$$z \leq 5.$$

The sketch of the solution is the region from  $-\infty$  to 5 shaded with a square bracket ] (or closed dot  $\bullet$ ) at 5 on the number line.

2. The bill for the repair of an automobile is \$455. Included in the bill is a parts charge of \$275. The remainder of the bill is for labor. The charge for labor is \$30 per hour. How many hours were spent repairing the automobile?

**Solution.** Let  $x$  be the number of hours needed for the repair. The bill, including parts and labor, is then

$$275 + 30x.$$

Equating this with the total cost of 455 dollars, we get

$$275 + 30x = 455.$$

Solving for  $x$  we get

$$x = \frac{1}{30}(455 - 275) = \frac{180}{30} = 6.$$

Thus the repair took three hours.

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1. The bill for the repair of an automobile is \$455. Included in the bill is a parts charge of \$275. The remainder of the bill is for labor. The charge for labor is \$20 per hour. How many hours were spent repairing the automobile?

**Solution.** Let  $x$  be the number of hours needed for the repair. The bill, including parts and labor, is then

$$275 + 30x.$$

Equating this with the total cost of 455 dollars, we get

$$275 + 30x = 455.$$

Solving for  $x$  we get

$$x = \frac{1}{30}(455 - 275) = \frac{180}{30} = 6.$$

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