Answer Key

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THE UNIVERSAL AMERICAN SCHOOL
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Math Advanced B
Unit 2
(Inequality)

Summative Quiz
Teacher: Mr. Seitsinger, Ms. Abdulla
Date: November 22nd, 2016

Instructions:

- Do not open the assessment until instructed to
- **Calculators are permitted**
- Answer all questions on the paper (Request extra paper if necessary)

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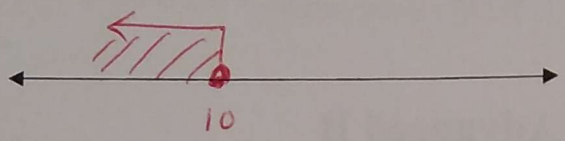
Part A: Short Answer

1. Solve for the given variable and graph your answer on a number line.

3 Marks

a) $-3m + 7 \geq -23$

$m \leq 10$



b) $-3(x + 7) \leq 2x + 4$

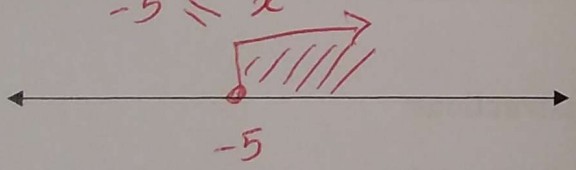
3 Marks

$-3x - 21 \leq 2x + 4$

$+3x \quad -4 \quad +3x \quad -4$

$-25 \leq 5x$

$-5 \leq x$



c) $x - 4 \leq 2(x + 1) \leq x + 5$

4 Marks

$x - 4 \leq 2(x+1)$ and $2(x+1) \leq x+5$

$x - 4 \leq 2x + 2$

$-x \quad -x$

$-4 \leq x + 2$

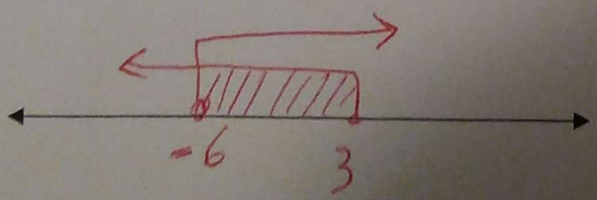
$-2 \quad -2$

$-6 \leq x$

$2x + 2 \leq x + 5$

$-x \quad -2 \quad -x \quad -2$

$x \leq +3$



4 Marks

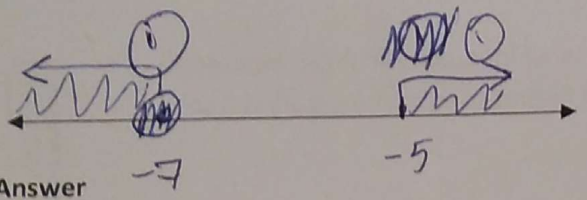
d) $3x-1 \leq 2(x-4)$ or $-1(x+3) \leq x+7$

$3x-1 \leq 2x-8$ $\quad -x-3 \leq x+7$

$-2x \quad +1 \quad -2x \quad +1 \quad +x \quad -7 \quad +x \quad -7$

$x \leq -7$ $\quad -10 \leq 2x$

① $\quad -5 \leq x$ ①



Part B: Long Answer

1. Five times the sum of a number and 3 is no more than 3 multiplied by 2 less than twice a number. Find the number. — 3 Marks

$5(x+3) \leq 3(2x-2)$ ①

$5x+15 \leq 6x-6$ ①

$-5x \quad +6 \quad -5x \quad +6$

$21 \leq x$ ①

2. For statement $y < x$. — 2 Marks

Which is greater? $x-y$ or $y-x$

Explain your answer

if $y=5$, $x=6$

$6-5=1$ $\quad 5-6=-1$

$y < x$

small $\quad$ big

big − small = +

small − big = −

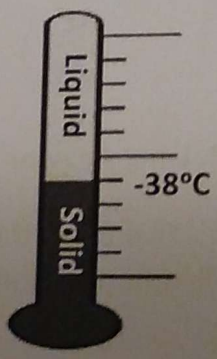
3. The melting point for an element is the temperature where the element changes from a solid to a liquid. Let C represent Celsius, and F represents Fahrenheit.

$$C = \frac{5(F-32)}{9}$$

- **Mercury is a metal that is liquid at room temperature.**
- **It becomes a solid at -38°C or lower.**
- **Mercury was typically used in thermometers because it expands evenly at it is heated.**

a) Using the information above, write an **inequality** that can be used to find the temperatures in **degrees Celsius** for which mercury is a **solid**.

2 Marks



$C \leq -38$

b) Use your answer from **part a** to find an inequality that can be used to find the temperature in Fahrenheit (**Make F the subject**).

4 Marks

$-38 \geq \frac{5(F-32)}{9}$ (1)

$32 + \frac{-38(9)}{5} \geq F$ (2)

$-36.4 \geq F$ (1)