

Exercises Day 1

Name _____

Mailbox _____

Round:

Round the number **4268.9493** to the nearest...

4300 1. Hundreds

4268.95 2. Hundredths

4269 3. Integer

Convert to standard notation:

4. $1.32 \times 10^{-4} = 0.000132$

5. $1.6475 \times 10^2 = 164.75$

Simplify the following expressions:

6.
$$\left[\frac{27 - \frac{(8+3)^2}{2} - \frac{1}{4} + 1}{(2-4)^2} \right]^2 = \left[\frac{27 - \frac{(11)^2}{2} - \frac{1}{4} + 1}{4} \right]^2 = \left[\frac{(27)(4) - \frac{(242) - \frac{1}{4} + \frac{4}{4}}{4}}{4} \right]^2 = \left[\frac{-131}{4} \right]^2 = \left[\frac{-131}{16} \right]^2 = -8.1875^2 = 67.035$$

7. $5xy + 2x^2y - xy + 4xy = 2x^2y + 8xy$

8. $3xy - y^2 - x^2 + 4y - 3x^2 = 3xy - y^2 = 4x^2 + 4y$

9. $8^{\frac{1}{4}} = 1.68793$

10. Here is the formula for body mass index:

$$BMI = \frac{w}{h^2}$$

where w = weight in kilograms and h = height in meters. What is the body mass index for someone who weighs 65 kg and is 1.8 meters tall? $\frac{65}{1.8^2} = 20.1$

11. What is the body mass index for someone who weighs 140 lbs and is 68 inches tall?

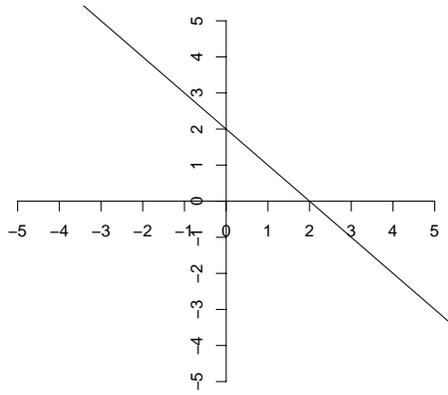
1 pound = 0.4536 kg, so 140 pounds = 63.503 kg

1 inch = 0.0254 meters, so 68 inches = 1.727 meters

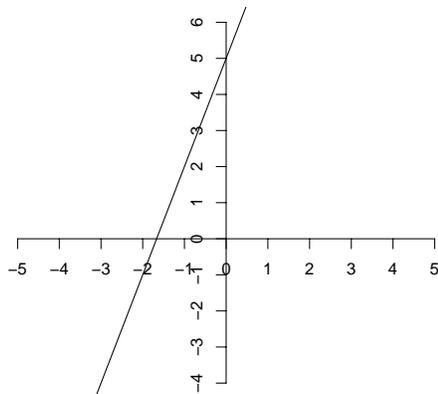
$$BMI = \frac{63.503}{1.727^2} = 21.3$$

Graph the following functions:

12. $y = 2 - x$



13. $2y - 4 = 3x + y + 1$ $2y = 3x + y + 5$ $y = 3x + 5$



Solve the following equations and check where appropriate:

14.

$$9b + 24 = 72 - 3b$$

$$12b = 48$$

$$b = 4$$

Check:

$$\begin{aligned}9(4) + 24 &= 72 - 3(4) \\36 + 24 &= 72 - 12 \\60 &= 60\end{aligned}$$

15.

$$\begin{aligned}3(x - 1) - 12 &= 3 \\3(x - 1) &= 15 \\3x - 3 &= 15 \\3x &= 18 \\x &= 6\end{aligned}$$

Check:

$$\begin{aligned}3(6 - 1) - 12 &= 3 \\15 - 12 &= 3 \\3 &= 3\end{aligned}$$

16. $|6 - 3| = 3$

17. $|6 + 3| = 9$

18.

$$\begin{aligned}5 + |15x - 10| &= 5 \\|15x - 10| &= 0 \\15x - 10 &= 0 \\15x &= 10 \\x &= \frac{2}{3}\end{aligned}$$

There is no ± 0 , so only one solution

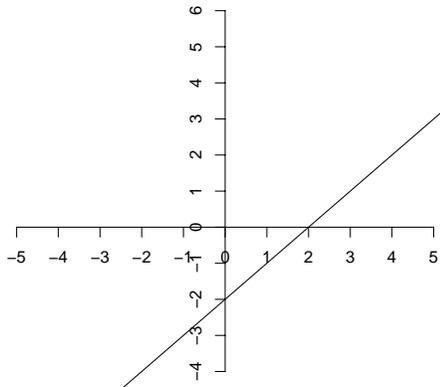
19.

$$\begin{aligned}x - 3 &> 2x + 12 \\x &> 2x + 15 \\-x &> 15 \\x &< -15\end{aligned}$$

Find and graph the equation of the lines through these points:

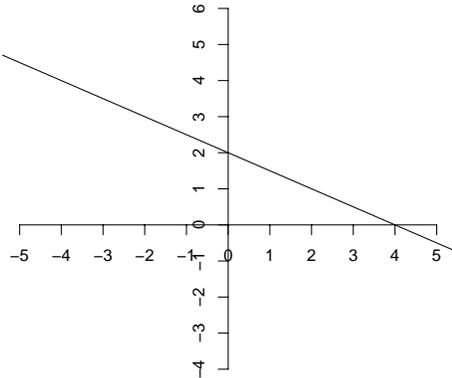
20.

$$\begin{aligned} & (3, 1)(8, 6) \\ m &= \frac{6 - 1}{8 - 3} = \frac{5}{5} = 1 \\ y &= x + b \\ 1 &= 3 + b \\ b &= -2 \\ y &= x - 2 \end{aligned}$$



21.

$$\begin{aligned} & (4, 0)(2, 1) \\ m &= \frac{0 - 1}{4 - 2} = \frac{-1}{2} \\ y &= \frac{-1}{2}x + b \\ 1 &= \frac{-1}{2}(2) + b \\ 1 &= b - 1 \\ b &= 2 \\ y &= \frac{-1}{2}x + 2 \end{aligned}$$



Use the quadratic equation to solve the following equation, and check your solution:

22.

$$\begin{aligned}
 x^2 + 2x - 3 &= 0 \\
 a &= 1 \\
 b &= 2 \\
 c &= -15 \\
 \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \\
 &= \frac{-2 \pm \sqrt{4 - 4(1)(-15)}}{2} \\
 &= \frac{-2 \pm \sqrt{64}}{2} \\
 &= \frac{-2 \pm 8}{2}
 \end{aligned}$$

The roots are -5, 3

To check, note that the expression can be factored into $(x - 3)(x + 5)$, confirming that the roots are 3 and -5.