

Arithmetic on the TI 83/84

Your calculator is incredibly powerful and relatively easy to use. This activity will touch on a small part of its capabilities.

1. Perform the following calculations on your calculator. Give rational answers for a - e.

a) $-4 - 8 = -12$

b) $8\{3 - 2[3 - 2(5 + 2)]\} = 200$

c) $-4 - -5 = 1$

d) $\frac{-3^2 + (-5)^2 - 2^3}{3^{3-2}} = 8/3$

e) $\frac{45 - 13}{2(31 - 6) + 12} = 16/31$

f) $\frac{5}{2\pi} + 2^{2\pi} \approx 78.676$

2. Evaluate $\frac{23 - 15}{4^3}$ ($R = 1/8$) by hand and then on the calculator. **Be absolutely certain you have the correct value for R before you move on.** Store that value in 'R'. Display as a fraction on the screen. What is R^{-5} ? **32768**

3. Evaluate (a) $1 + 2R \div (4R)$ ($3/2$) and then evaluate (b) $(1 + 2R) \div (4R)$ ($5/2$). Are they the same? **No** Explain why or why not? Which of the expressions in (3) is the same as $\frac{1 + 2R}{4R}$?

(a) $1 + 2R \div (4R) = 1 + \frac{2R}{4R}$

(b) $(1 + 2R) \div (4R) = \frac{1 + 2R}{4R}$

4. Do the following operations and then rewrite your answer as a fraction.

$$\frac{45}{2} + \frac{17 - 23}{5} - \frac{13 + 18}{9 - 5} + \frac{-3 - 12}{-3 + 6} + 5 = 271/20$$

5. Do the following operations and then rewrite your answer as a fraction.

$$\left(\frac{3}{7}\right)^2 + \left(\frac{49}{5}\right)^{-1} = 2/7$$

6. Evaluate the following. Write your result in fraction form if possible. Do not round your answer before hitting the fraction key!

a) $\frac{5 + 16 * 3^2}{37 - 2 * 7} = 149/23 = 6 \frac{11}{23}$

b) $\sqrt{\frac{16 + 3 * 35}{235 - 3 * 13}} = 11/14$

c) $\sqrt{400 - 5 * 4^2} = \sqrt{320} \approx 17.89$

d) $\left(\frac{5 - 12^2}{37 + 4 * 9}\right)^3 = -2685619/389017 \approx -6.90$

7. Store the following values into your calculator: $A = 4$, $B = 5$, $C = -6$ and then evaluate the following:

a) $12B + 6C^2 - 12A$ (**228**)

b) $\frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$ (Pay attention to Order of Operations!)

$b_1 = 3/4$, $b_2 = -2$

8. Evaluate the following and write your answers as fractions.

a) $\left(\frac{2}{5}\right)^2 = 4/25$ b) $\left(\frac{2}{5}\right)^{-2} = 25/4$ c) $\left(\frac{3}{8}\right)^3 = 27/512$ d) $\left(\frac{3}{8}\right)^{-3} = 512/27$

e) By comparing parts (a) and (b) and then parts (c) and (d), determine what the negative exponent does.

$$(a/b)^{-n} = (b/a)^n$$

9. Use your calculator to evaluate: Write your answer in correct scientific notation.

c) $5678 \times 34,000,000,000,000,000 =$ b) $\frac{9 \times 10^{-14}}{4 \times 10^{-15}} = 2.25 \times 10$

You get an incorrect answer if you enter the 2nd number with all zero. You get a correct answer by entering the second number as 34×10^{18} . Correct answer: 1.93052×10^{23}

c) $(345)^4(807)^{12} \approx 1.08 \times 10^{45}$ d) $\frac{408}{2589^9} \approx 7.81 \times 10^{-29}$

10. One light-year is the distance that light travels in one year (365 days). The speed of light is about 186,000 miles per second. Express your answer in scientific notation.

- In miles, how long is one light year? 5.87×10^{12} mi
- The circumference of Earth is roughly 25,000 miles. Assuming light would curve around the Earth, how long would it take light to travel all the way around the Earth?
 1.34×10^{-1} sec