

## Practice Exam #2

*Calculators are not allowed on this exam.*

1. Mr. Rodgers is teaching his neighbors how to do basic operations. Devise a story problem for each of the given problem types that he can ask his neighbors.
  - a) Missing addend situation
  - b) Comparison subtraction situation
  - c) Fundamental counting principal situation
  - d) Repeated addition situation
  - e) Repeated subtraction situation
  - f) Sharing equally situation
  
2. Given the work of the following students, first decide whether or not the student is doing the problem correctly. If they are doing it correctly, **explain what they did and why it works**. If they are doing it incorrectly, **explain which step(s) they did that was incorrect**.
  - a) Shaq was asked to find “675 – 97.” He instead solves the problem “678 - 100” and gives you the answer “578”
  
  - b) Chris was asked to find “413 – 248.” Here is how he did this problem →

413
<u>-248</u>
-5
-30
<u>200</u>
165
  
  - c) LeBron was asked to find “31 x 54”. He then takes a minute to solve it in his head, and then explains ““54 is 4 more than 50, so I solve 31 x 50 = 1550 then add 4 back to get 1554.”

3. Calculators inhibit a child's ability to learn the fundamental operations (circle one answer)
- True                      False
4. Solve the following problems **mentally (exactly)** and **explain your strategy clearly**. If you just solve it on paper without explaining you won't get points!
- a)  $420 - 361$
- b)  $11 \times 71$
- c)  $479.24 + 8.06 + 1.94 - 400 + 20.76$
- d) 25% of \$68.00
5. Kobe is paying for a large bill at a nice restaurant for all of his baller buddies. The bill is \$684.20 (without tip). The restaurant added 15% gratuity automatically since it was a large group.
- a) How much will his final bill be with tip? **Show your work and do not estimate.**
- b) **Explain** to Kobe how he could calculate his tip **mentally** without using his calculator watch.
6. **Estimate** the following computations mentally and **explain** your solution. **Show your work.**
- a)  $0.51912 \times 297.9052 =$  \_\_\_\_\_
- b)  $(0.6673 \times 10^7) \times (2.9701 \times 10^3) =$  \_\_\_\_\_
7. **Estimate** the following by using a mental percentage bar. **Explain** and draw a percentage bar to help your argument.
- a) An item originally marked at \$489.97 on sale for 38% off the listed price. What is its sale price?
- b) What is 175% of 279?

8. Create a diagram modeling the following arithmetic problem using base ten blocks and an empty number line. Make sure to show how you combine and take away blocks.

$$1,402 + 49 - 873$$

9. Children should be taught only the standard procedures for doing the four arithmetic operations.

True                  False

10. Subtraction can be used to solve a division problem.

True                  False

11. Multiplication can be used to solve a division problem.

True                  False

12. Explain why in mathematics we can't divide by zero.

13. Evaluate the following using the standard algorithm and partial sums method.

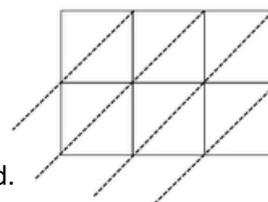
$$343 + 695$$

14. Evaluate the following using the standard algorithm and the equal additions method.

$$433 - 309$$

15. Evaluate the following using the standard algorithm, the partial products method, and the lattice method.

$$403 \times 62$$



16. Evaluate the following using the standard algorithm and the partial quotients method.

$$593 \div 20$$

17. Would it be appropriate to estimate  $4011 \times 0.061$  with  $4000 \times 0.1$ ?  $40 \times 6$ ? Explain why each option would or would not be appropriate.

18. For  $56 \times 94$ , which estimation is "better?" Explain. (a)  $60 \times 94$ , (b)  $56 \times 90$ , (c)  $60 \times 90$ . How would you estimate the product mentally?

19. Be able to convert normal numbers to scientific notation and convert from scientific to normal notation.