DIY: Long Division with Numbers

To review long division with numbers, watch the following set of YouTube videos explaining the basic techniques for doing long division with numbers, followed by 16 division practice problems for you to try covering the basic techniques, with answers and detailed solutions. Some additional resources are included for more practice at the end.

- 1. Basics of Division
- 2. Long Division Basics
- 3. Long Division with 2-digit Divisors
- 4. Converting fractions to Decimals and Long Division with Decimals
- 5. Examples of long division with decimals

Practice problems: The following problems use the techniques demonstrated in the above videos. The answers are given after the problems. Then detailed solutions, if you need them, are given after the answer section. For further assistance and help please contact *Math Assistance Area*.

1. Fill in the blanks:
$$43 \div 60 = \boxed{} = \boxed{}$$

2. Write a division problem using the information that $7 \times 5 = 35$.

4. Divide, then express your answer in the 3 different forms indicated.

 $5. \ \ Divide, then \ express \ your \ answer \ in \ the \ 3 \ different \ forms \ indicated.$

(Note: in the decimal form, round your answer to three decimal places.

21 432	=	r
	=	•
	=	

6. Divide, then express your answer in the 3 different forms indicated. (This will be a repeating decimal.)

7. Divide: 2.4 9.12

8. Divide. Then round your answer to 3 decimal places

9. $\frac{0.01932}{7} =$

10.
$$\frac{4.48}{.4}$$
 =

11. $5.48 \div 0.8 =$

- 12. Divide 524 by .04
- 13. Divide: $\frac{0.45}{2.2}$ = Give your answer in the exact form (as a repeating decimal) and rounded to five decimal places. Also, write an equivalent fraction in lowest terms.

14. Convert the fraction $\frac{3}{7}$ to a repeating decimal. (Hint: you will have to carry the division out several places before it starts to repeat!)

15. Which is larger: $\frac{5}{16}$ or $\frac{8}{23}$? (Hint: convert both fractions to decimals.)

16. You have \$25.82. What is the maximum amount of money you could give to each of your 6 friends if each must have the same amount? How much would you have left?

Answers:

2. If
$$7 \times 5 = 35$$
, then $35 \div 7 = 5$ or $35 \div 5 = 7$

4. =
$$36 \text{ r } 3$$

= $36.5 = 36\frac{1}{2}$

$$5. = 20 \text{ r } 12$$

5. = 20 r 12
= 20.571 =
$$20\frac{4}{7}$$

$$= 118.3\overline{8}$$

$$= 118 \frac{7}{18}$$

 $=\frac{9}{44}$

14.
$$\frac{3}{7} = .\overline{428571}$$

15.
$$\frac{8}{23} > \frac{5}{16}$$

13.
$$.20\overline{45} = .20455$$
 14. $\frac{3}{7} = .\overline{428571}$ 15. $\frac{8}{23} > \frac{5}{16}$ 16. \$4.30 with \$0.02 (2 cents) left

Detailed Solutions:

3. 4196 -> 4190	2 3 4 196 -	2 4 9 6 -8 1 6
34 34 396 -8 16 16	∞, 96 ÷ 4 = [3	
4. 6 J 219 → 6 J 219	3 - 18 - 18 3	3 → 6/219 -18 39
36	219 ÷ 6 = 36	
to get the answer as a decimal	36, 6 21910 →	36.5 6 \219.0 -18 39 -36 -30 30
for the mixed numbe	r, we have that	

5.
$$21\overline{\smash{\big)}\ 432} \rightarrow 21\overline{\smash{\big)}\ 432} \rightarrow 21\overline{\smash{\big)}\ 432}$$
 note: because 12421, $\rightarrow = 20 \text{ r } 12$

we put a "0" in the quotient.

To get the mixed number, recall 21/432 = 20 r 12 =
$$20\frac{12}{21}$$
 (reduce fraction) = $20\frac{4}{7}$

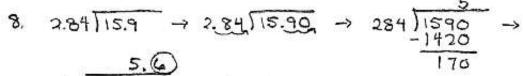
6.
$$72 | 8524 \rightarrow 72 | 8524 \rightarrow 72 | 8524 \rightarrow 72 | 8524 \ -\frac{72}{132} | \frac{132}{132} | \frac{132}{-72} | \frac{132}{400} | \frac{132}{28} | \frac{118.3}{72} | \frac{118.3}{132} | \frac{118.388}{132} | \frac{1$$

mixed number
$$72/8524 = 118 + 28 = 118 \frac{28}{72}$$

$$\frac{29}{72} = \frac{4.7}{4.18} = \frac{7}{18}$$

$$= 118 \frac{7}{18}$$

7.
$$2.4 | 9.12 \rightarrow 24 | 91.2 \rightarrow$$



note: when we "quess" what digit will go into the gustient line, we are estimating, in

7284 ques mito 1700. I guessed 6 times, but 6 x 284 = 1704 which is too big . Now this case, how many times I I go back and correct.

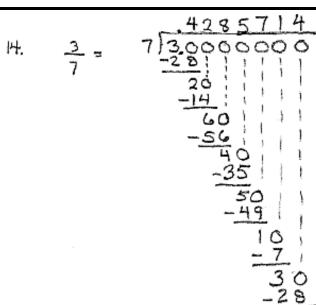
We need our answer correct to 3 decimal places, so we must carry the division out to 4 decimal places to round correctly.

note: if we were asked for the quotient correct to 2 decimal places, 5.59 85 × 5.60

$$10. \frac{4.48 \times 10}{.4 \times 10} = \frac{44.8}{4} = 4144.8 = 4144.8$$

$$= 11.2$$

11.	8.0 ÷ 84.2	= .ह. डि.सुर	= 8)54.8	= 8 54	4.8
	Continuingi	6.85 854.80 -48 -49 -64 40	9 Recta _{5,4} ,	8500 0.8 =	(4.85)
12.	524 2	.04) 524 3,100	_= .04[52	4.00, - 4	13100 + 52400. + 52400. - 4700. - 4700
	"	3,135-3			000
13,	.45 2.2	રહ્યું.સ્ડ	= 22\f4 -4	.2 .5 = 22	4.500
					-01
be ca	nthrue dividus use digits w ient aren't	, ĭ	204545 500000		10 -0 100 -88 12
refe	eating yel.		100	<u>,45</u> -	.204545
		digits will start to repeat.	120 110		= ,2045 20454545.
			120	2	-[.20455]
		D 80 St 41 14			



in longer division problems like this, it is especially important to keep columns straight.

-7 | 30 } the remainders have -28 } begun to repeat

$$\frac{3}{7} = .428571428571...$$

16.
$$#25.82 \div 6 = 6 | 25.82 = 6 | 25.82
-18
-18
-18
-02 & left over$$

stop at 2 dicimal places, since this is maney. You could give up to \$4.30 to each of your 6 friends with 2\$ (\$0.02) left over.

Additional Resources For more practice problems, click on the following link for some long division worksheets: **Practice with Long Division** <u>Practice with Long Division with Decimals</u> MATH ASSISTANCE AREA
LEARNING COMMONS: ONE-STOP ACADEMIC SUPPORT CENTER

Stop by or call (630) 942-3339