



MATH NEWS



Grade 5, Module 2, Topic E

5th Grade Math

Module 2: Multi-Digit Whole Number and Decimal Fraction Operations

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Grade 5 Module 2 of Eureka Math (Engage New York) covers Multi-Digit Whole Number and Decimal Fraction Operations. This newsletter will discuss Module 2, Topic E.

Topic E. Mental Strategies for Multi-Digit Whole Number Division

Words to know

- | | |
|-----------------------------|--------------------|
| • multiples | • dividend (whole) |
| • quotient | • divide |
| • divisor | • division |
| • round | • estimation |
| • approximate ($\approx$) | • basic facts |

Things to Remember!!!

- When estimating quotients, round the divisor only.
- Once the divisor is rounded, find a multiple of the first digit of the divisor that would create a number that is close to the dividend.
Example: $835 \div 34$ Round 34 to 30. 8 is not a multiple of 3 but 9 is, so our dividend becomes 900.
 $\approx 900 \div 30$
 $= 30$
- The dividend is referred to as the whole.
- When dividing by a power of 10 (10, 100, 1000) the digits in the whole (dividend), shift to the right. When dividing by 10, the digits shift 1 place to the right. When dividing by 100, the digits shift 2 places to the right and when dividing by 1,000, the digits shift 3 places to the right.

OBJECTIVES OF TOPIC E

- Use divide by 10 patterns for multi-digit whole number division.
- Use basic facts to approximate quotients with two-digit divisors.

Focus Area– Topic E

Mental Multi-digit whole number division

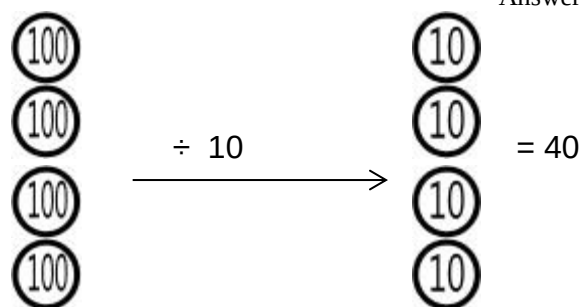
Knowing the multiples of a number

2 – 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, ...
 3 – 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, ...
 4 – 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, ...
 5 – 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, ...
 6 – 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, ...
 7 – 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, ...
 8 – 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96, ...
 9 – 9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99, 108, ...
 10 – 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, ...
 11 – 11, 22, 33, 44, 55, 66, 77, 88, 99, 110, 121, 132, ...
 12 – 12, 24, 36, 48, 60, 72, 84, 96, 108, 120, 132, 144, ...

Divide. Below number disks are used to show what happens when 400 is divided by 10.

$$400 \div 10$$

Answer:



Divide.

a. $640,000 \div 100$

(shift two places to the right)
 $= 6,400$

b. $420,000 \div 7,000$

$= 420,000 \div 1,000 \div 7$
 $= (420,000 \div 1,000) \div 7$
 (shift three places to the right)
 $= 420 \div 7$
 $= 60$

c. $27,000 \div 90$

$= 27,000 \div 10 \div 9$
 $= (27,000 \div 10) \div 9$
 (shift one place to the right)
 $= 2,700 \div 9$
 $= 300$

d. $350,000 \div 500$

$= 350,000 \div 100 \div 5$
 $= (350,000 \div 100) \div 5$
 (shift two places to the right)
 $= 3,500 \div 5$
 $= 700$

Estimate the quotient for the following problems.

a. $243 \div 56$ 56 rounds to 60 $\approx \underline{240} \div \underline{60}$ 24 is a multiple of 6, $= (240 \div 10) \div 6$ so the dividend $= 24 \div 6$ becomes 240 $= \underline{4}$	b. $633 \div 92$ 92 rounds to 90 $\approx \underline{630} \div \underline{90}$ 63 is a multiple of 9, $= (630 \div 10) \div 9$ so the dividend $= 63 \div 9$ becomes 630 $= \underline{7}$	c. $483 \div 64$ 64 rounds to 60 $\approx \underline{480} \div \underline{60}$ 48 is a multiple of $= (480 \div 10) \div 6$ 6, so the dividend $= 48 \div 6$ becomes 480 $= \underline{8}$
d. $3,924 \div 64$ 64 rounds to 60 $\approx \underline{3,600} \div \underline{60}$ 39 is not a multiple $= (3,600 \div 10) \div 6$ of 6, but 36 is and it is $= 360 \div 6$ close to 39, so the $= \underline{60}$ dividend becomes $3,600$	e. $5,567 \div 94$ 94 rounds to 90 $\approx \underline{5,400} \div \underline{90}$ 55 is not a multiple $= (5,400 \div 10) \div 9$ of 9, but 54 is and it is $= 540 \div 9$ close to 55, so the $= \underline{60}$ dividend becomes $5,400$	f. $2,749 \div 47$ 47 rounds to 50 $\approx \underline{2,500} \div \underline{50}$ 27 is not a multiple $= (2,500 \div 10) \div 5$ of 5, but 25 is and it is $= 250 \div 5$ close to 27, so the $= \underline{50}$ dividend becomes $2,500$
g. $8,391 \div 38$ 38 rounds to 40 $\approx \underline{8,000} \div \underline{40}$ 8 is a multiple of 4, so $= (8,000 \div 10) \div 4$ the dividend becomes $= 800 \div 4$ $8,000$ $= \underline{200}$	h. $6,438 \div 73$ 73 rounds to 70 $\approx \underline{6,300} \div \underline{70}$ 64 is not a multiple $= (6,300 \div 10) \div 7$ of 7, but 63 is and it $= 630 \div 7$ close to 64, so the $= \underline{90}$ dividend becomes $6,300$	i. $6,205 \div 27$ 27 rounds to 30 $\approx \underline{6,000} \div \underline{30}$ 6 is a multiple of 3, $= (6,000 \div 10) \div 3$ so the dividend $= 600 \div 3$ becomes $6,000$ $= \underline{200}$

Mrs. Henry spent \$513 buying Christmas gifts for her 21 grandchildren. If all of the gifts were the same cost, **about** how much did she spend on each gift?

Problem Solving Approach: $\$513$ (amount spent on gifts) $\div$ 21 (number of grandchildren) 21 rounds to 20

$$\begin{aligned}
 &\approx \$600 \div 20 \leftarrow 5 \text{ is not a multiple of } 2, \text{ but } 6 \text{ is and it is close to } 5, \\
 &= (600 \div 10) \div 2 \quad \text{so the dividend becomes } 600 \\
 &= 60 \div 2 \\
 &= \$30
 \end{aligned}$$

Mrs. Henry spent about \$30 on each gift for her 21 grandchildren.

Marcus has saved \$3,345 working **about** 42 different home repair jobs. If he was paid **about** the same amount per job, **about** how much did Marcus make at each different job?

Problem Solving Approach: $\$3,345$ (Marcus's savings) $\div$ 42 (number of Marcus' jobs) 42 rounds to 40

$$\begin{aligned}
 &\approx \$3,200 \div 40 \leftarrow 33 \text{ is not a multiple of } 4, \text{ but } 32 \text{ is and it is close to } 33, \\
 &= (3,200 \div 10) \div 4 \quad \text{so the dividend becomes } 3,200 \\
 &= 320 \div 4 \\
 &= \$80
 \end{aligned}$$

Marcus made **about** \$80 at each of his different home repair jobs.