

DIFFERENTIATION

Division is Multiplication by a Fraction

Multiplication and Division 26 Fractions and Decimals 27

Based on your Professional Teacher Judgment and Pre-assessment data, Levels with **1** may be included in the first lesson; Based on embedded assessment data, Levels with **2** **3** may be included in these lessons. The anchor charts for this concept may look like these on a 'Wall that Teaches' over a few lessons.

MD 1, 2 Divide in 2 ways – into 'groups of 2' and '2 equal groups'

MD 5 Divide into equal rows (array) describe using 2 division and 2 multiplication number sentences

MD 7, 8 Divide in 4 ways – into 'groups of 2' and '2 equal groups'

MD 10 Multiply by 2 Distributive property

$$2 \times 7 = 14$$

$$5 + 2$$

$$2 \times 5 = 10$$

$$2 \times 2 = 4$$

$$10 + 4 = 14$$

MD 10 PA 17 Divide by 2 Related to halving

$$15 \div 2 = 7 \text{ r}1$$

$$\frac{1}{2} \text{ of } 15 = 7 \text{ r}1$$

$$10 + 5$$

$$4 + 1$$

$$10 \div 2 = 5$$

$$4 \div 2 = 2$$

$$5 + 2 = 7$$

MD 11 Multiply by 4 Distributive property

$$4 \times 7 = 28$$

$$5 + 2$$

$$4 \times 5 = 20$$

$$4 \times 2 = 8$$

$$20 + 8 = 28$$

MD 10 Divide by 4 Related to quartering

$$37 \div 4 = 9 \text{ r}1$$

$$\frac{1}{4} \text{ of } 37 = 9 \text{ r}1$$

$$20 + 17$$

$$16 + 1$$

$$20 \div 4 = 5$$

$$16 \div 4 = 4$$

$$5 + 4 = 9$$

MD 12 Multiply by 3 Distributive property

$$3 \times 7 = 21$$

$$5 + 2$$

$$3 \times 5 = 15$$

$$3 \times 2 = 6$$

$$15 + 6 = 21$$

MD 12 Divide by 3 Related to thirding

$$16 \div 3 = 5 \text{ r}1$$

$$\frac{1}{3} \text{ of } 16 = 5 \text{ r}1$$

$$9 + 7$$

$$6 + 1$$

$$9 \div 3 = 3$$

$$6 \div 3 = 2$$

$$3 + 2 = 5$$

MD 13 Multiply by 5 Distributive property

$$5 \times 7 = 35$$

$$5 + 2$$

$$5 \times 5 = 25$$

$$5 \times 2 = 10$$

$$25 + 10 = 35$$

MD 13 Divide by 5 Related to fifthing

$$37 \div 5 = 7 \text{ r}2$$

$$\frac{1}{5} \text{ of } 37 = 7 \text{ r}2$$

$$20 + 17$$

$$15 + 2$$

$$20 \div 5 = 4$$

$$15 \div 5 = 3$$

$$4 + 3 = 7$$

MD 14 Multiply by 9 Distributive property

$$9 \times 7 = 63$$

$$5 + 2$$

$$9 \times 5 = 45$$

$$9 \times 2 = 18$$

$$45 + 18 = 63$$

MD 14 Divide by 9 Related to ninthing

$$71 \div 9 = 7 \text{ r}8$$

$$\frac{1}{9} \text{ of } 71 = 7 \text{ r}8$$

$$27 + 44$$

$$27 + 9 = 36$$

$$36 + 8$$

$$27 \div 9 = 3$$

$$36 \div 9 = 4$$

$$3 + 4 = 7$$

MD 15 Multiply by 6 Distributive property

$$6 \times 7 = 42$$

$$5 + 2$$

$$6 \times 5 = 30$$

$$6 \times 2 = 12$$

$$30 + 12 = 42$$

MD 15 Divide by 6 Related to sixthing

$$23 \div 6 = 3 \text{ r}5$$

$$\frac{1}{6} \text{ of } 23 = 3 \text{ r}5$$

$$12 + 11$$

$$6 + 5$$

$$12 \div 6 = 2$$

$$6 \div 6 = 1$$

$$2 + 1 = 3$$

MD 16 Multiply by 8 Distributive property

$$8 \times 7 = 56$$

$$5 + 2$$

$$8 \times 5 = 40$$

$$8 \times 2 = 16$$

$$40 + 16 = 56$$

MD 16 Divide by 8 Related to eighthing

$$55 \div 8 = 6 \text{ r}7$$

$$\frac{1}{8} \text{ of } 55 = 6 \text{ r}7$$

$$40 + 15$$

$$8 + 7$$

$$40 \div 8 = 5$$

$$8 \div 8 = 1$$

$$5 + 1 = 6$$

MD 17 Multiply by 7 Distributive property

$$7 \times 6 = 42$$

$$5 + 1$$

$$7 \times 5 = 35$$

$$7 \times 1 = 7$$

$$35 + 7 = 42$$

MD 17 Divide by 7 Related to seventhing

$$37 \div 7 = 5 \text{ r}2$$

$$\frac{1}{7} \text{ of } 37 = 5 \text{ r}2$$

$$21 + 16$$

$$14 + 2$$

$$21 \div 7 = 3$$

$$14 \div 7 = 2$$

$$3 + 2 = 5$$

MD 20 Highest Common Factor

12 15
Factors of 12 = 1, 2, 3, 4, 6, 12
Factors of 15 = 1, 3, 5, 15
Common factors of 12 and 15 = 1, 3
Highest common factor of 12 and 15 = 3

MD 21 Simplifying Multiplication and Division Using Factors

$$144 \div 8 = 72 \div 4 = 36 \div 2 = 18$$

$$16 \times 4 = 32 \times 2$$

MD 22 Divisibility Tests

118

- Divisible by 2 because it's even
- Not divisible by 4 because it has an odd tens digit and the ones digit is not 2 or 6
- Not divisible by 8 because it has an odd number of hundreds and the two-digit number is not 4 less and 4 more than a two-digit number that is divisible by 8
- Not divisible by 5 because the ones digit is not 5 or 0
- Not divisible by 10 because the ones digit is not 0
- Not divisible by 3 because – because each place value is one more than a multiple of 3, so the remainders are the digits. The digits do not add up to a multiple of 3.
- Not divisible by 9 because – because each place value is one more than a multiple of 9, so the remainders are the digits. The digits do not add up to a multiple of 9.
- Not divisible by 6 because it is not divisible by both 2 and 3

MD 23 FD 21 Divide by single-digit numbers, dividing remainders to create fractions

$$77 \div 6 = 12 \frac{5}{6}$$

$$\frac{1}{6} \text{ of } 77 = 12 \frac{5}{6}$$

$$60 + 17$$

$$12 + 5$$

$$60 \div 6 = 10$$

$$\frac{1}{6} \text{ of } 60 = 10$$

$$12 \div 6 = 2$$

$$\frac{1}{6} \text{ of } 12 = 2$$

$$5 \div 6 = \frac{5}{6}$$

$$\frac{1}{6} \text{ of } 5 = \frac{5}{6}$$

$$10 + 2 + \frac{5}{6} = 12 \frac{5}{6}$$

MD 24 Multiply two-digit numbers Distributive property

$$93 \times 74 = 6882$$

70	+	4
6300		360
210		12

$$90 \times 70 = 9 \times 10 \times 7 \times 10 = 63 \times 100 = 6300$$

$$90 \times 4 = 9 \times 10 \times 4 = 36 \times 10 = 360$$

$$3 \times 70 = 7 \times 10 \times 3 = 70 \times 3 = 210$$

$$3 \times 4 = 12$$

$$6300 + 360 + 210 + 12 = 6882$$

MD 25 Divide decimals by whole numbers and powers of 10

$$35.7 \div 4 = 8.925$$

$$32 + 3.7$$

$$3.6 + 0.1$$

$$32 \div 4 = 8$$

$$3.6 \div 4 = 0.9$$

$$\frac{1}{4} \times 32 = 8$$

$$\frac{1}{4} \times 3.6 = 0.9$$

Change the decimal to a fraction, divide.

$$0.1 \div 4 = \frac{1}{10} \div 4 = \frac{1}{10} \times \frac{1}{4} = \frac{1}{40}$$

$$\frac{10}{100} \div 4 = \frac{10}{100} \times \frac{1}{4} = \frac{10}{400} = \frac{1}{40}$$

$$\frac{100}{1000} \div 4 = \frac{100}{1000} \times \frac{1}{4} = \frac{100}{4000} = \frac{1}{40}$$

Multiply the decimal by 10, divide, then divide the product by 10.

$$0.1 \div 4 = \frac{1}{4} \times 0.1 = \frac{1}{40}$$

$$1 \div 4 = 10 \div 40 = \frac{1}{4} \times 10 = \frac{10}{40} = \frac{1}{4}$$

$$0.25 \div 10 = \frac{1}{4} \times 0.25 = \frac{0.25}{4} = 0.0625$$

$$0.25 \div 10 = 0.025$$

$$0.25 \div 10 = 0.025$$

$$8 + 0.9 + 0.025 = 8.925$$

MD 26 FD 27 Division is multiplication by a fraction

$$56 \div 4 = 14$$

$$\frac{1}{4} \times 56 = 14$$

When we divide by 4, we are making the number a quarter times as big. When we divide by 4, we are multiplying by a quarter. We are multiplying by a fraction when we divide.

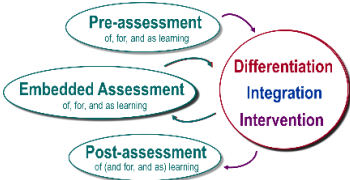
$$40 \div 4 = 10$$

$$\frac{1}{4} \times 40 = 10$$

$$16 \div 4 = 4$$

$$\frac{1}{4} \times 16 = 4$$

$$10 + 4 = 14$$



Embedded assessment data may tell us we need to re-explicitly teach some Levels.