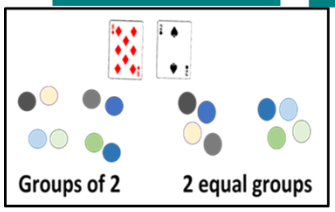
DIFFERENTIATION

Prime Numbers

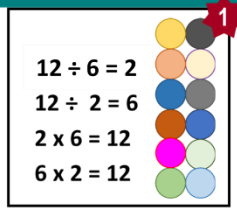
Multiplication and Division 28 Patterns and Algebra 33

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 the these lessons. The anchor charts for this concept may look like these on a 'Wall that Teaches' over a few lessons.

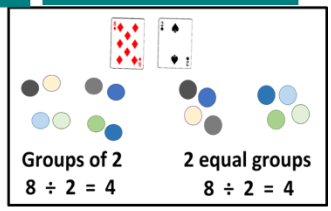
MD 1, 2 Divide in 2 ways – into 'groups of 2' and '2 equal groups'



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 x 7 = 14

5 + 2

2 x 5 = 10

2 x 2 = 4

10 + 4 = 14

MD 10 PA 17 Divide by 2 Related to halving

15 ÷ 2 = 7 r1

10 + 5

4 + 1

10 ÷ 2 = 5

4 ÷ 2 = 2

$\frac{1}{2}$ of 15 = 7 r1

10 + 5

4 + 1

$\frac{1}{2}$ of 10 = 5

$\frac{1}{2}$ of 4 = 2

5 + 2 = 7

MD 11 Multiply by 4 Distributive property

4 x 7 = 28

5 + 2

4 x 5 = 20

4 x 2 = 8

20 + 8 = 28

MD 10 Divide by 4 Related to quartering

37 ÷ 4 = 9r1

20 + 17

16 + 1

20 ÷ 4 = 5

16 ÷ 4 = 4

$\frac{1}{4}$ of 37 = 9r1

20 + 17

16 + 1

$\frac{1}{4}$ of 20 = 5

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

5 + 4 = 9

MD 12 Multiply by 3 Distributive property

3 x 7 = 21

5 + 2

3 x 5 = 15

3 x 2 = 6

15 + 6 = 21

MD 12 Divide by 3 Related to thirding

16 ÷ 3 = 5 r1

9 + 7

6 + 1

9 ÷ 3 = 3

6 ÷ 3 = 2

$\frac{1}{3}$ of 16 = 5 r1

9 + 7

6 + 1

$\frac{1}{3}$ of 9 = 3

$\frac{1}{3}$ of 6 = 2

3 + 2 = 5

MD 13 Multiply by 5 Distributive property

5 x 7 = 35

5 + 2

5 x 5 = 25

5 x 2 = 10

25 + 10 = 35

MD 13 Divide by 5 Related to fifthing

37 ÷ 5 = 7r2

20 + 17

15 + 2

20 ÷ 5 = 4

15 ÷ 5 = 3

$\frac{1}{5}$ of 37 = 7r2

20 + 17

15 + 2

$\frac{1}{5}$ of 20 = 4

$\frac{1}{5}$ of 15 = 3

4 + 3 = 7

MD 14 Multiply by 9 Distributive property

9 x 7 = 63

5 + 2

9 x 5 = 45

9 x 2 = 18

45 + 18 = 63

MD 14 Divide by 9 Related to ninthing

71 ÷ 9 = 7r8

27 + 44

36 + 8

27 ÷ 9 = 3

36 ÷ 9 = 4

$\frac{1}{9}$ of 71 = 7r8

27 + 45

36 + 8

$\frac{1}{9}$ of 27 = 3

$\frac{1}{9}$ of 36 = 4

3 + 4 = 7

MD 15 Multiply by 6 Distributive property

6 x 7 = 42

5 + 2

6 x 5 = 30

6 x 2 = 12

30 + 12 = 42

MD 15 Divide by 6 Related to sixthing

23 ÷ 6 = 3r5

12 + 11

6 + 5

12 ÷ 6 = 2

6 ÷ 6 = 1

$\frac{1}{6}$ of 23 = 3r5

12 + 11

6 + 5

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

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

2 + 1 = 3

MD 16 Multiply by 8 Distributive property

8 x 7 = 56

5 + 2

8 x 5 = 40

8 x 2 = 16

40 + 16 = 56

MD 16 Divide by 8 Related to eighthing

55 ÷ 8 = 6r7

40 + 15

8 + 7

40 ÷ 8 = 5

8 ÷ 8 = 1

$\frac{1}{8}$ of 55 = 6r7

40 + 15

8 + 7

$\frac{1}{8}$ of 40 = 5

$\frac{1}{8}$ of 8 = 1

5 + 1 = 6

MD 17 Multiply by 7 Distributive property

7 x 6 = 42

5 + 1

7 x 5 = 35

7 x 1 = 7

35 + 7 = 42

MD 17 Divide by 7 Related to seventhing

37 ÷ 7 = 5r2

21 + 16

14 + 2

21 ÷ 7 = 3

14 ÷ 7 = 2

$\frac{1}{7}$ of 37 = 5r2

21 + 16

14 + 2

$\frac{1}{7}$ of 21 = 3

$\frac{1}{7}$ of 14 = 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 ÷ 8 = 72 ÷ 4 = 36 ÷ 2 = 18

16 x 4 = 32 x 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 ÷ 6 = $12\frac{5}{6}$

60 + 17

12 + 5

60 ÷ 6 = 10

12 ÷ 6 = 2

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

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

60 + 17

12 + 5

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

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

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

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

MD 24 Multiply two-digit numbers Distributive property

93 x 74 = 6882

	70	+	4
90	6300		360
+			
3	210		12

90 x 70 = 9 x 10 x 7 x 10 = 63 x 100 = 6300

90 x 4 = 9 x 10 x 4 = 36 x 10 = 360

3 x 70 = 7 x 10 x 3 = 70 x 3 = 210

3 x 4 = 12

6300 + 360 + 210 + 12 = 6882

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

MD 25 Multiply decimals by whole numers and powers of 10

9.3 x 74 = 688.2

	70	+	4
9	630		36
+			
0.3	21		1.2

9 x 70 = 9 x 7 x 10 = 63 x 10 = 630

0.3 x 70 = 0.3 x 10 x 7 = 3 x 7 = 21

0.3 x 4 = $\frac{3}{10}$ x 4 = $\frac{12}{10}$ = 1.2

630 + 36 + 21 + 1.2 = 688.2

MD 25 Divide decimals by whole numers and powers of 10

35.7 ÷ 4 = 8.925

32 + 3.7

3.6 + 0.1

Change the decimal to a fraction, divide.

32 ÷ 4 = 8

3.6 ÷ 4 = 0.9

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

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

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

0.1 ÷ 4 =

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

$\frac{10}{100} \div 4 =$

$\frac{100}{1000} \div 4 = \frac{25}{1000}$

= 0.025

$\frac{1}{4}$ x 0.1 =

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

$\frac{1}{4} \times \frac{10}{100} =$

$\frac{1}{4} \times \frac{100}{1000} = \frac{25}{1000}$

= 0.025

0.1 ÷ 4 =

1 ÷ 4 ÷ 10 =

0.25 ÷ 10 =

0.25 ÷ 10 = 0.025

$\frac{1}{4}$ x 0.1 =

$\frac{1}{4}$ x 1 ÷ 10 =

0.25 ÷ 10 =

0.25 ÷ 10 = 0.025

8 + 0.9 + 0.025 = 8.925

MD 26 FD 27 Division is multiplication by a fraction

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

$\frac{1}{4}$ x 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.

56 ÷ 4 =

40 + 16

40 ÷ 4 = 10

16 ÷ 4 = 4

10 + 4 = 14

$\frac{1}{4}$ x 56 =

40 + 16

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

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

MD 26 PA 33 Prime Numbers