Mental Division

7 Cool Strategies for Mental Division!

MD

MD1: Manipulate Calculation

140 ÷ 20

(÷10) (÷10)

14 ÷ 2 = 7

MD2: Divide by 100 then Double

800 ÷ 50 = 16

800 ÷ 100 = 8

8 x 2 = 16

MD3: Halving

Half of 12 is equivalent to 12÷2

½ of 12 = 12÷2

MD4: Halve & Halve Again

84 ÷ 4 = 21

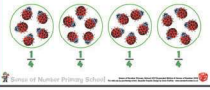
Half of 84 = 42 (84 ÷ 2)

Half of 42 = 21 (84 ÷ 4)

MD5: Division as a Fraction

Sharing Model

¼ of 20 = 20 ÷ 4 = 5



MD6: Find the Hunk!

72 ÷ 4 = 18

40 + 32 (÷ 4)

10 + 8 = 18

MD7: Jump (÷10)

10	1
80	
8	

+10

Mental Division

- MD1 Manipulate Calculation
- MD2 Divide by 100 then Double
- MD3 Halving
- MD4 Halve and Halve Again
- MD5 Division as a Fraction
- MD6 Find the Hunk
- MD7 Jump

7 Cool Strategies for Mental Division!

MD1a: Manipulate Calculation

84 ÷ 12

(÷2) (÷2)

42 ÷ 6 = 7

(÷2) (÷2)

21 ÷ 3 = 7

MD2a: Divide by 100 then Double twice

800 ÷ 25 = 32

800 ÷ 100 = 8

8 x 2 = 16

16 x 2 = 32

MD3a: Halving

Half of (20) 26

10 + 3 = 13

MD4a: Halve & Halve Again

(finding a quarter)

128 ÷ 4 = 32

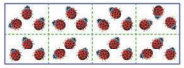
Half of 128 = 64 (128 ÷ 2)

Half of 64 = 32 (128 ÷ 4)

MD5a: Division as a Fraction

Sharing Model

⅛ of 24 = 24 ÷ 8 = 3



MD6a: Find the Hunk!

65 ÷ 4 = 16r1

40 + 25 (÷ 4)

10 + 6r1 = 16r1

MD7a: Jump (÷10)

3 (Pictorial)

100	10	1
360		
36		

+10

MD1b: Manipulate Calculation

1200 ÷ 400

(÷100) (÷100)

12 ÷ 4 = 3

MD3b: Halving

Half of (50) 58

25 + 4 = 29

MD4b: Halve, Halve, Halve

(finding an eighth)

360 ÷ 8 = 45

Half of 360 = 180 (360 ÷ 2)

Half of 180 = 90 (360 ÷ 4)

Half of 90 = 45 (360 ÷ 8)

MD5b: Division as a Fraction

¼ of 3 = 3 ÷ 4 = ¾

MD6b: Find the Hunk!

136 ÷ 4 = 34

120 + 16 (÷ 4)

30 + 4 = 34

MD7a: Jump (÷10)

100	10	1
360		
36		

+10

MD1c: Manipulate Calculation

162 ÷ 18

(÷2) (÷2)

81 ÷ 9 = 9

MD3c: Halving

Half of (80 + 12) 92

40 + 6 = 46

Half of 92

45 + 1 = 46

MD4c: Halve, Halve, Halve

5000 ÷ 8 = 625

Half of 5000 = 2500 (5000 ÷ 2)

Half of 2500 = 1250 (5000 ÷ 4)

Half of 1250 = 625 (5000 ÷ 8)

MD5c: Division as a Fraction

Mixed Number Model

¼ of 9 = 9 ÷ 4 = 9/4 = 2¼

(9 quarters = 2 and a quarter)

MD6c: Find the Hunk!

394 ÷ 6 = 65r4

360 + 34 (÷ 6)

60 + 5r4 = 65r4

MD7b: Jump (÷10/100)

1000	100	10	1
6300			
630			
63			

+10

+100

MD1d: Manipulate Calculation

18 ÷ 1.5

(x2) (x2)

36 ÷ 3 = 12

MD3d: Halving

(79 tens)

Half of 326

160 + 3 = 163

Half of 326

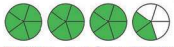
150 + 10 + 3 = 163

MD5d: Division as a Fraction

Mixed Number Model

⅕ of 17 = 17 ÷ 5 = 17/5 = 3 2/5

(3.4)



(17 fifths = 3 wholes and 2 fifths)

MD6d: Find the Hunk!

536 ÷ 4 = 134

400 + 120 + 16 (÷ 4)

100 + 30 + 4 = 134

MD7c: Jump (÷10/100/1000)

100	10	1	÷10	÷100	÷1000
634					
63.4					
6.34					
0.634					

+10

+100

+1000

MD1e: Manipulate Calculation

9.3 ÷ 0.3

(x10) (x10)

93 ÷ 3 = 31

MD3b: Halving

Half of 5.84

2.5 + 0.4 + 0.02

= 2.92

MD5e: Division as a Fraction

Mixed Number Model

⅛ of 19 = 19 ÷ 8 = 19/8 = 2 3/8

(2.375)

(19 eighths = 2 and 3 eighths)

MD6e: Find the Hunk!

18 ÷ 1.5 = 12

15 + 3 (÷ 1.5)

10 + 2 = 12

MD1f: Manipulate Calculation

6.25 ÷ 0.25

(x4) (x4)

25 ÷ 1 = 25

MD3f: Halving

Half of 34.72 = 17.36

15 + 2 + 0.35 + 0.01

(1 ten + 14 ones + 6 tenths + 12 hundredths)

Half of 34.72

10 + 7 + 0.3 + 0.6

MD5f: Division as a Fraction

Mixed Number Model

1/12 of 9 = 9 ÷ 12 = 9/12 = ¾

(0.75)

(9 twelfths = 3 quarters)

Progression Overviews

Sense of Number Written Strategies VCP © Sense of Number 2018

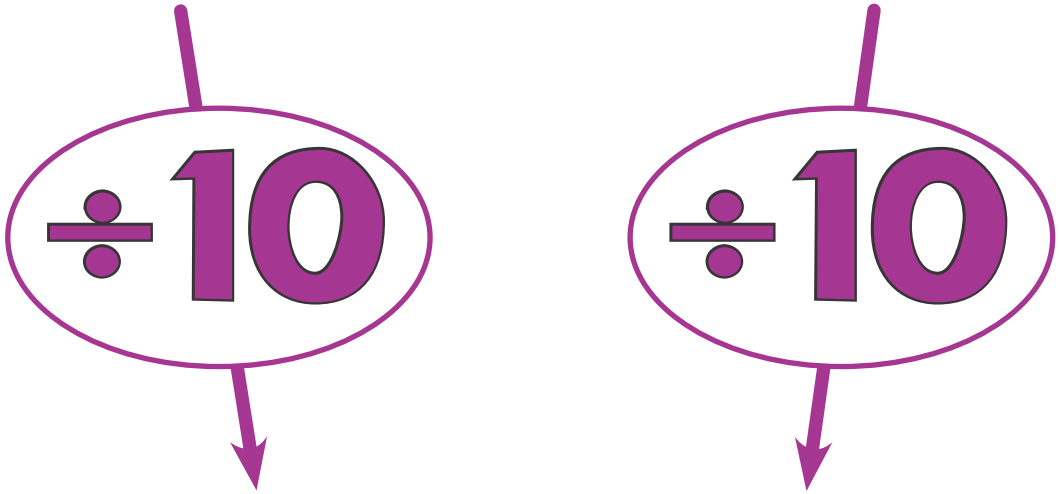
St Philip's CE Primary School

MD1: Manipulate Calculation

3

Small Quotient

$$140 \div 20$$



$$14 \div 2 = 7$$

MD1a: Manipulate Calculation

4

Small Quotient

$$84 \div 12$$

÷2 ÷2

$$42 \div 6 = 7$$

÷2 ÷2

$$21 \div 3 = 7$$

MD1b: Manipulate Calculation

4

Small Quotient

$$1200 \div 400$$

÷100 ÷100

$$12 \div 4 = 3$$

MD1c: Manipulate Calculation

5

Small Quotient

$$162 \div 18$$

$\div 2$ $\div 2$

$$81 \div 9 = 9$$

MD1d: Manipulate Calculation

6

Small Quotient

$18 \div 1.5$

×2 ×2

$36 \div 3 = 12$

MD1e: Manipulate Calculation

6

Small Quotient

$$9.3 \div 0.3$$

x10 x10

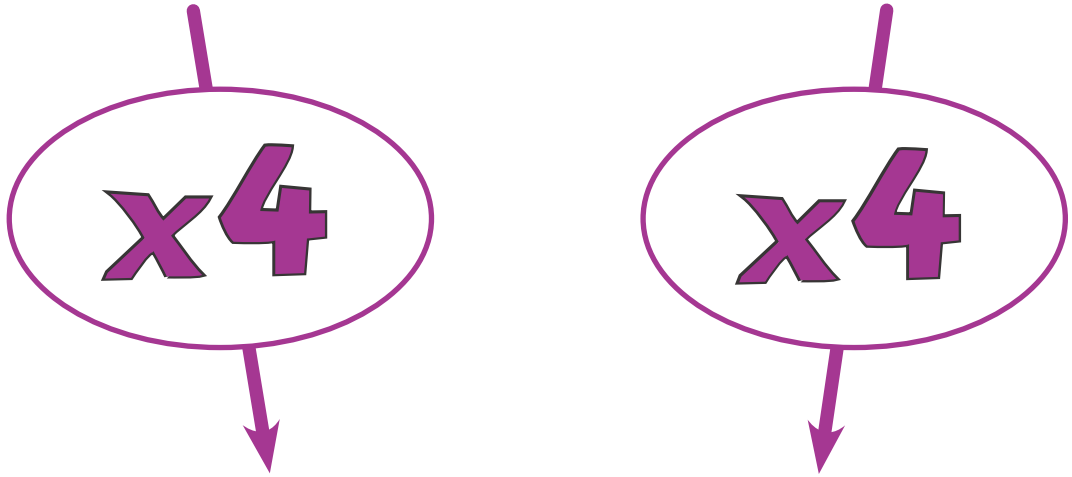
$$93 \div 3 = 31$$

MD1f: Manipulate Calculation

6

Small Quotient

$$6.25 \div 0.25$$



$$25 \div 1 = 25$$

MD2: Divide by 100 then Double

4

$$800 \div 50 = 16$$

$$800 \div 100 = 8$$

$$8 \times 2 = 16$$

MD2a: Divide by 100 then Double twice

5

$$800 \div 25 = 32$$

$$800 \div 100 = 8$$

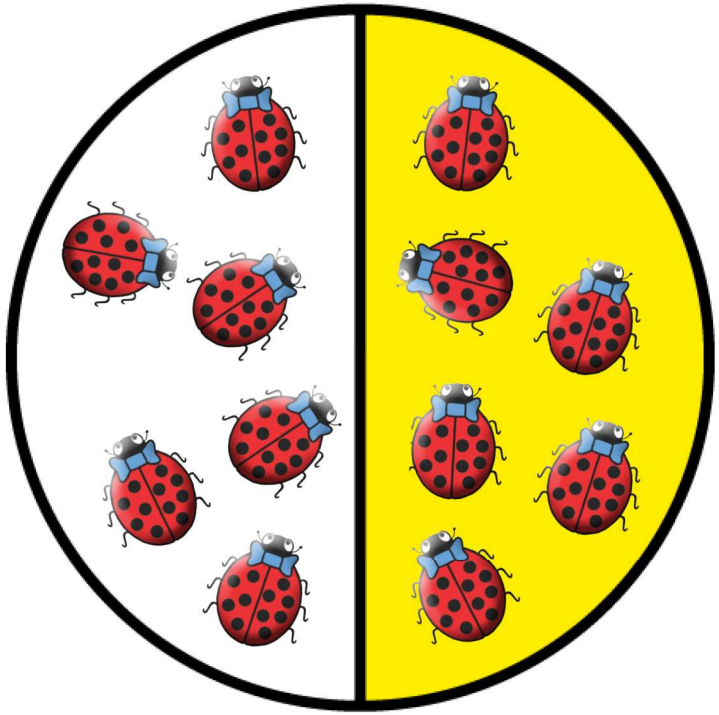
$$8 \times 2 = 16$$

$$16 \times 2 = 32$$

MD3: Halving

1

Half of 12 is equivalent to 12÷2



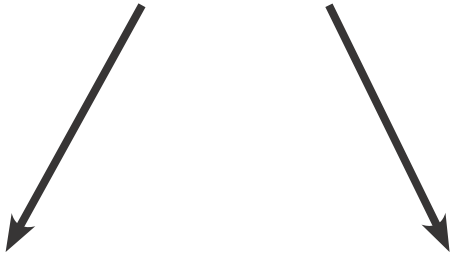
$\frac{1}{2}$ of 12 = 12÷2

MD3a: Halving

2

(20)

Half of 26

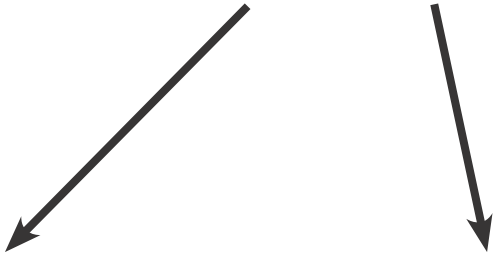


10 + 3 = 13

MD3b: Halving

3

Half of (50) 58



25 + 4 = 29

MD3c: Halving

4

(80 + 12)

Half of 92

40 + 6 = 46

Half of 92

45 + 1 = 46

MD3d: Halving

5

Half of 326

(32 tens)

160 + 3 = 163

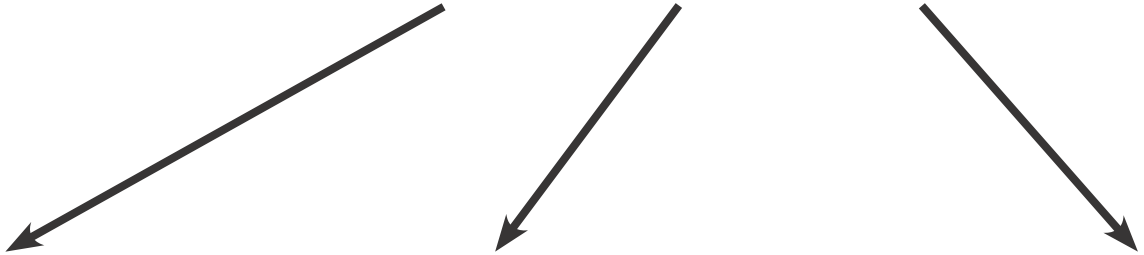
Half of 326

150 + 10 + 3 = 163

MD3e: Halving

6

Half of 5.84



2.5 + 0.4 + 0.02

= 2.92

MD3f: Halving

6

Half of 34.72 = 17.36

15 + 2 + 0.35 + 0.01

(2 tens + 14 ones + 6 tenths + 12 hundredths)

Half of 34.72

10 + 7 + 0.3 + 0.06

MD4: Halve & Halve Again

3

84 ÷ 4 = 21

Half of 84 = 42 (84 ÷ 2)

Half of 42 = 21 (84 ÷ 4)

MD4a: Halve & Halve Again

4

(finding a quarter)

$$128 \div 4 = 32$$

Half of 128 = 64 (128 ÷ 2)

Half of 64 = 32 (128 ÷ 4)

MD4b: Halve, Halve, Halve

5

(finding an eighth)

$$360 \div 8 = 45$$

Half of 360 = 180 (360 ÷ 2)

Half of 180 = 90 (360 ÷ 4)

Half of 90 = 45 (360 ÷ 8)

MD4c: Halve, Halve, Halve

6

5000 ÷ 8 = 625

Half of 5000 = 2500 (5000 ÷ 2)

Half of 2500 = 1250 (5000 ÷ 4)

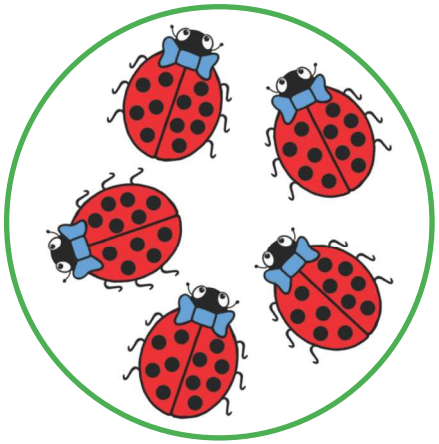
Half of 1250 = 625 (5000 ÷ 8)

MD5: Division as a Fraction

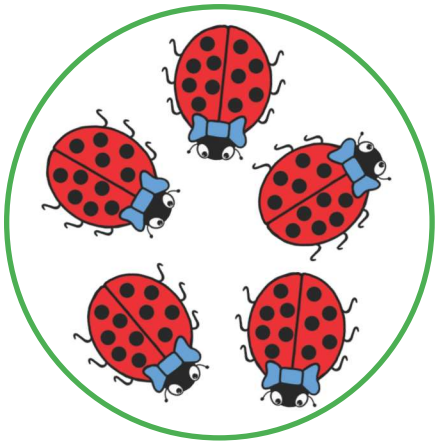
3

Sharing Model

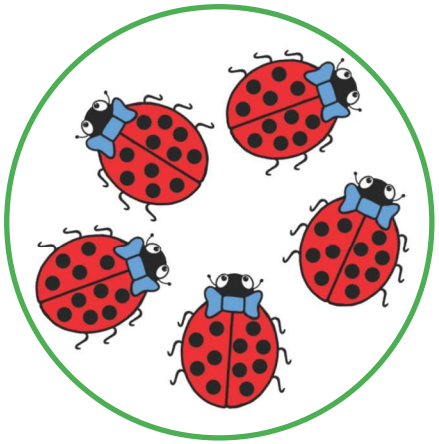
$\frac{1}{4}$ of 20 = 20 ÷ 4 = 5



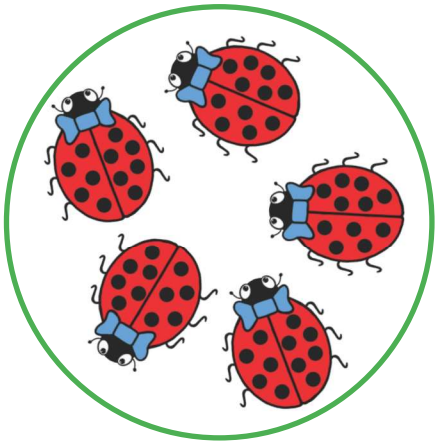
$\frac{1}{4}$



$\frac{1}{4}$



$\frac{1}{4}$



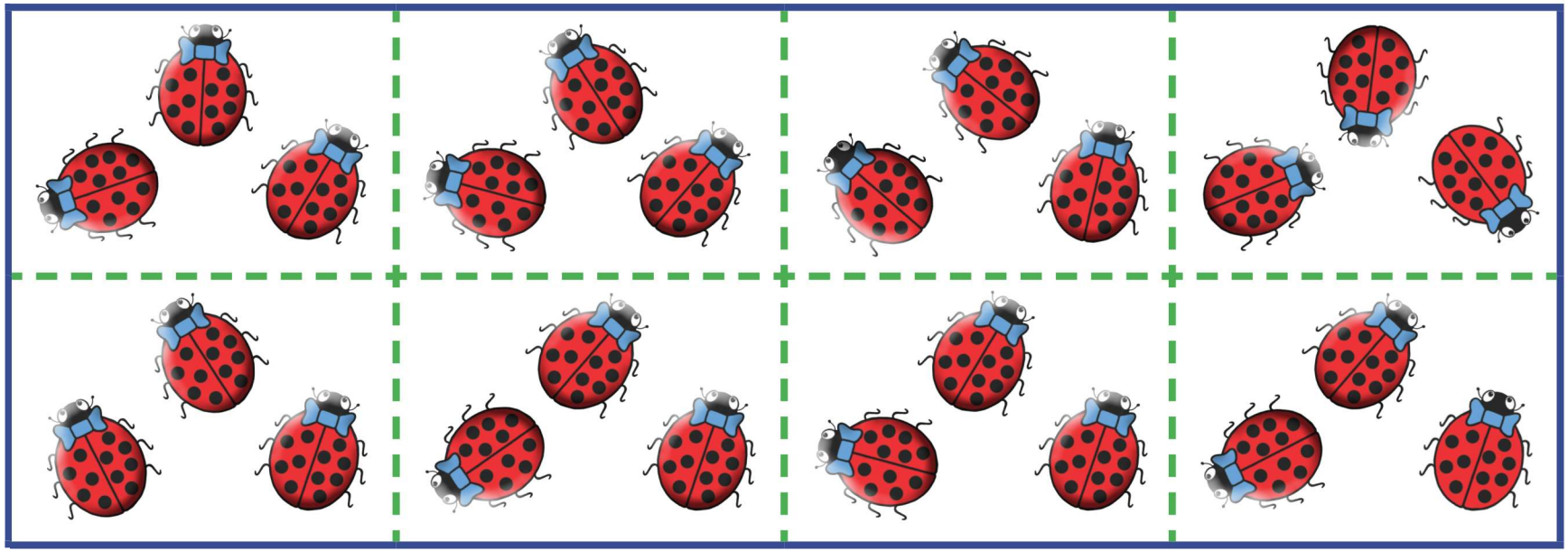
$\frac{1}{4}$

MD5a: Division as a Fraction

4

Sharing Model

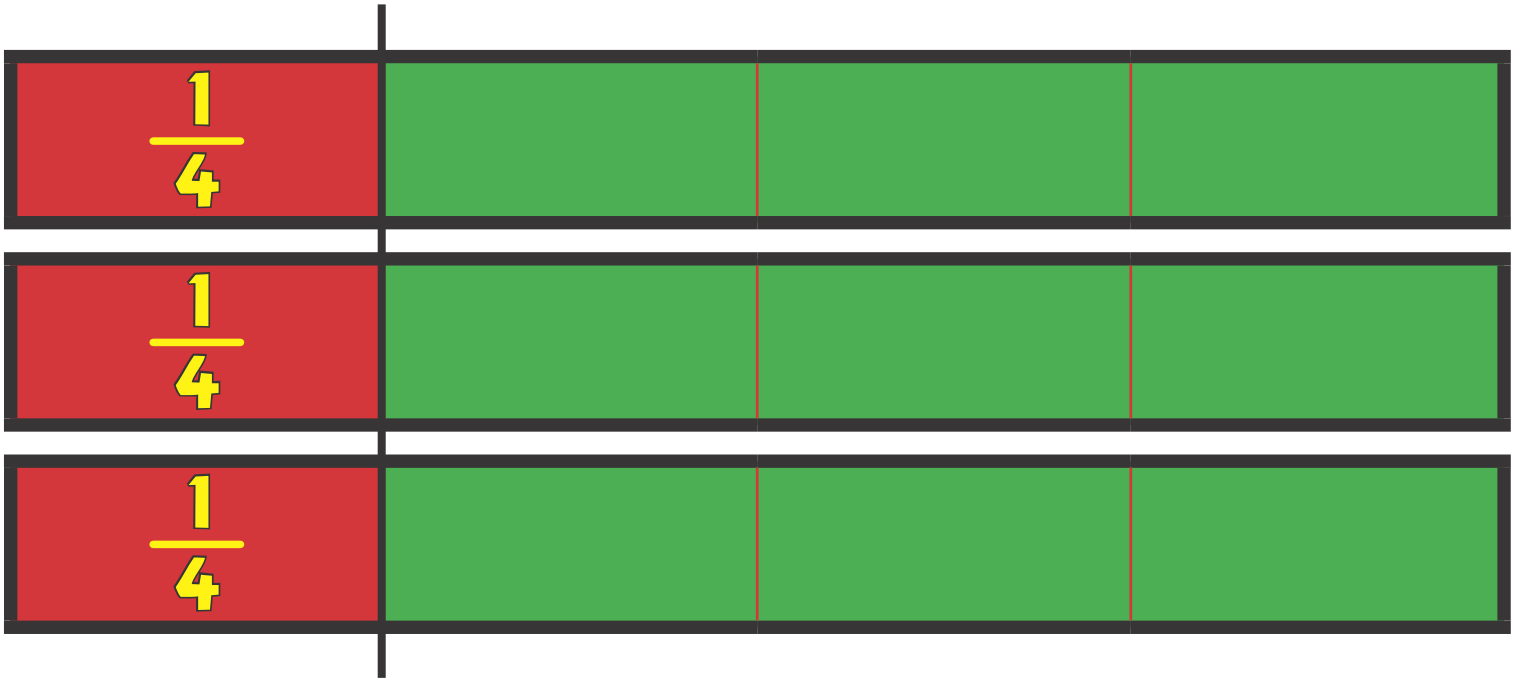
$\frac{1}{8}$ of 24 = 24 ÷ 8 = 3



MD5b: Division as a Fraction

4

$$\frac{1}{4} \text{ of } 3 = 3 \div 4 = \frac{3}{4}$$

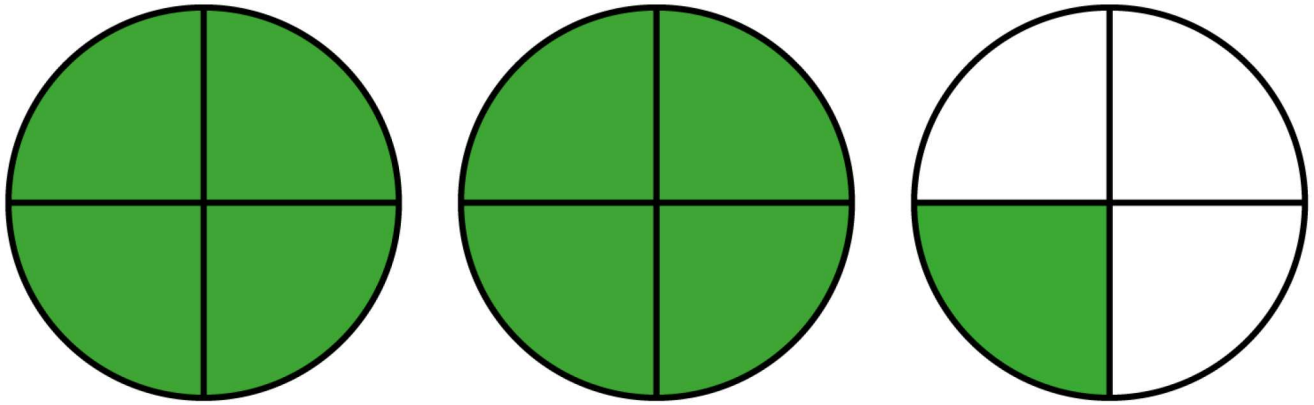


MD5c: Division as a Fraction

5

Mixed Number Model

$\frac{1}{4}$ of 9 = 9 ÷ 4 = $\frac{9}{4}$ = $2\frac{1}{4}$



(9 quarters = 2 and a quarter)

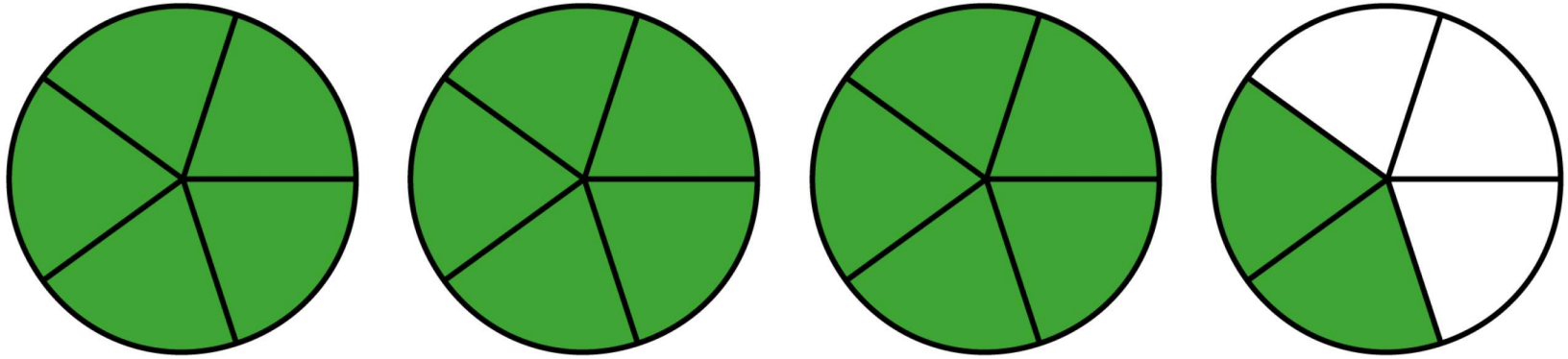
MD5d: Division as a Fraction

5

Mixed Number Model

$$\frac{1}{5} \text{ of } 17 = 17 \div 5 = \frac{17}{5} = 3\frac{2}{5}$$

(3.4)



(17 fifths = 3 wholes and 2 fifths)

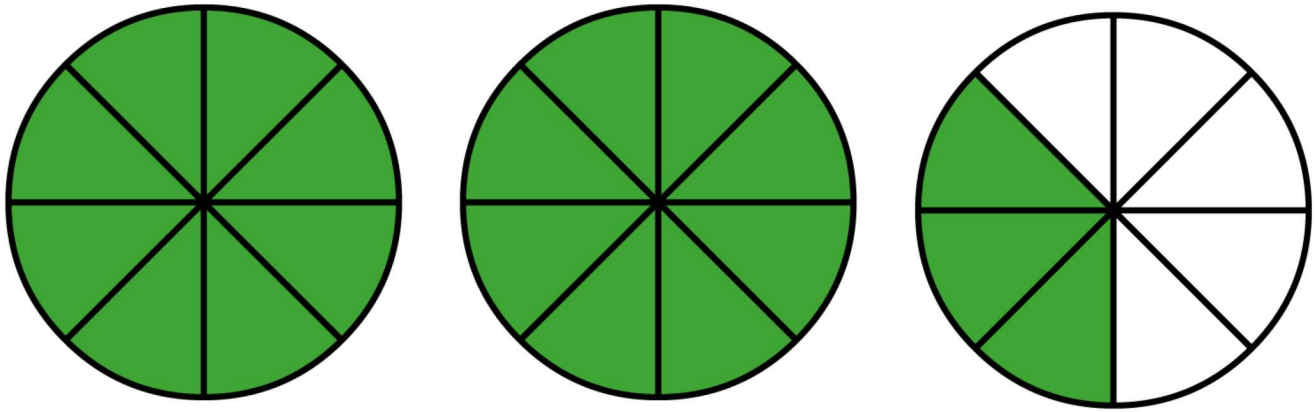
MD5e: Division as a Fraction

6

Mixed Number Model

$$\frac{1}{8} \text{ of } 19 = 19 \div 8 = \frac{19}{8} = 2\frac{3}{8}$$

(2.375)



(19 eighths = 2 and 3 eighths)

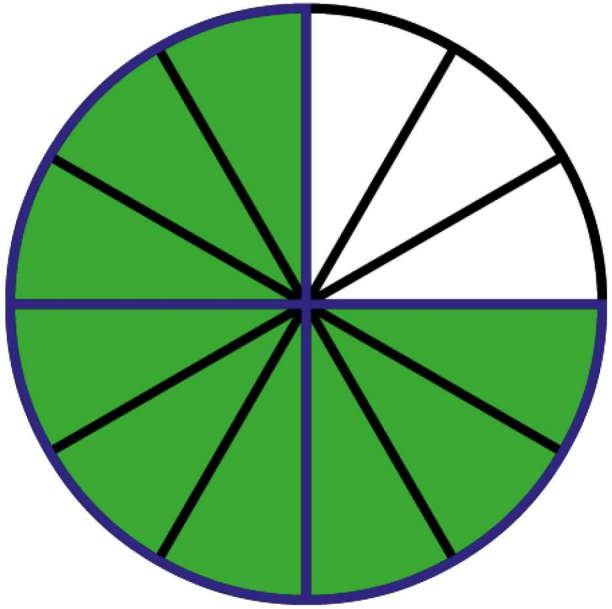
MD5f: Division as a Fraction

6

Mixed Number Model

$$\frac{1}{12} \text{ of } 9 = 9 \div 12 = \frac{9}{12} = \frac{3}{4}$$

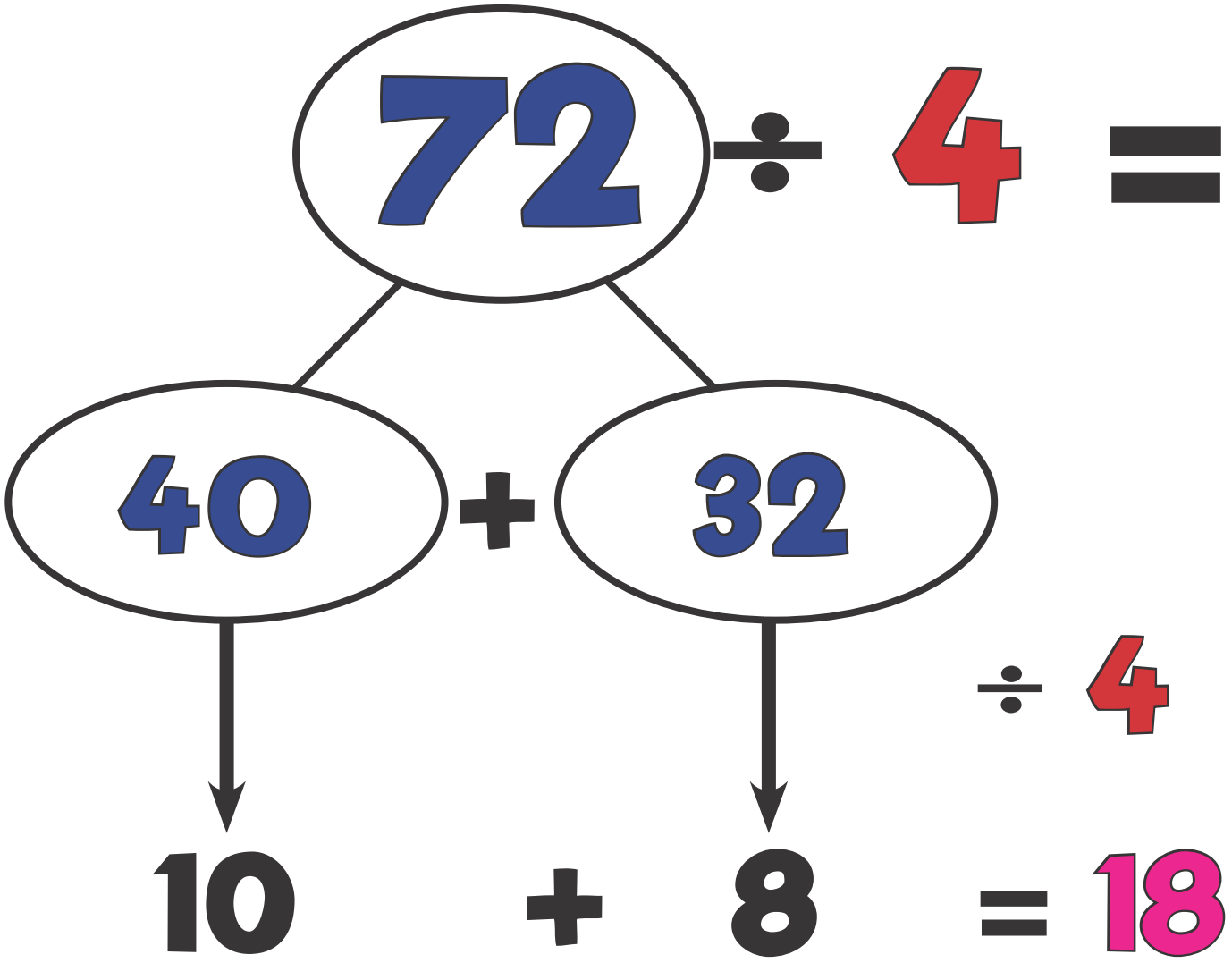
(0.75)



(9 twelfths = 3 quarters)

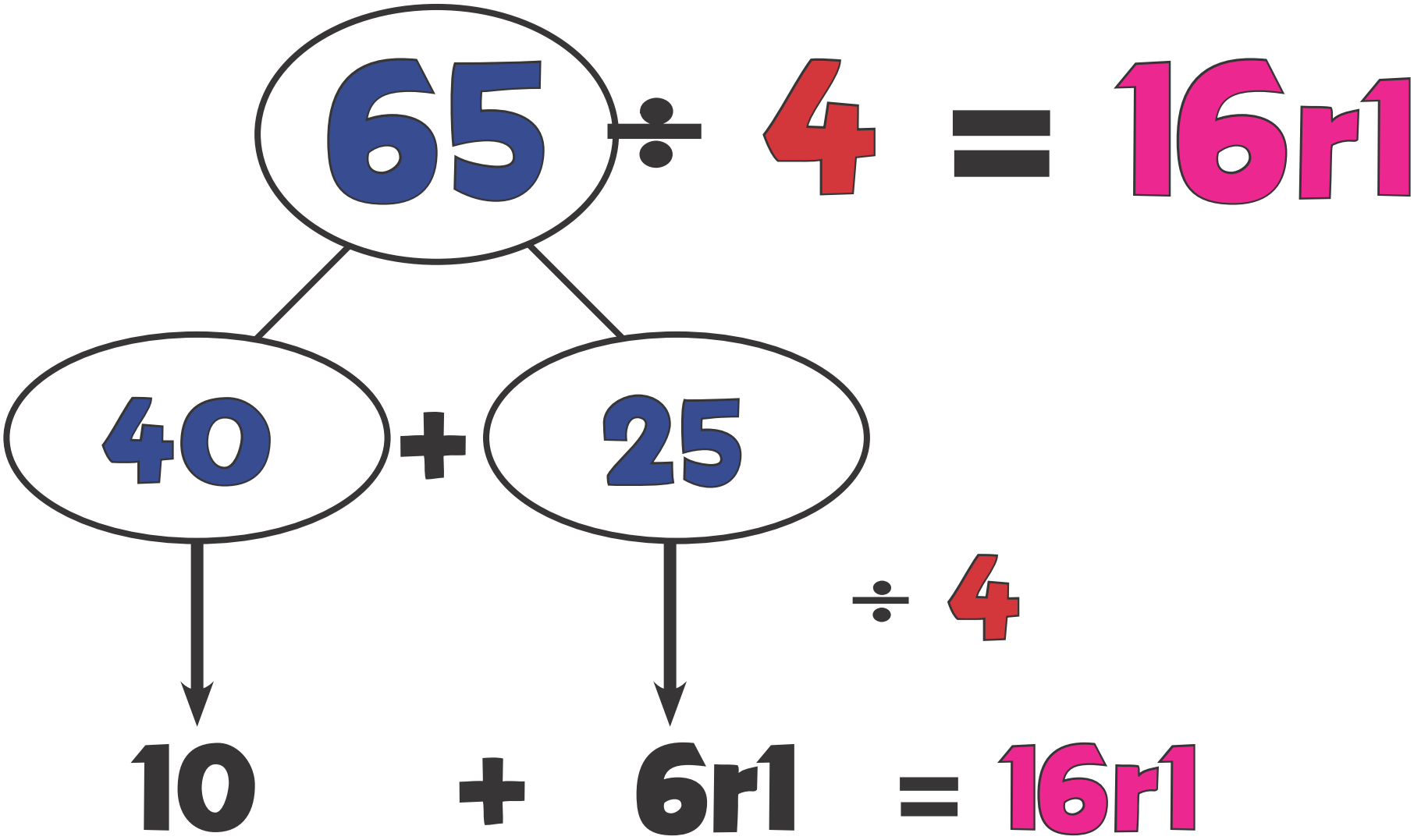
MD6: Find the Hunk!

4



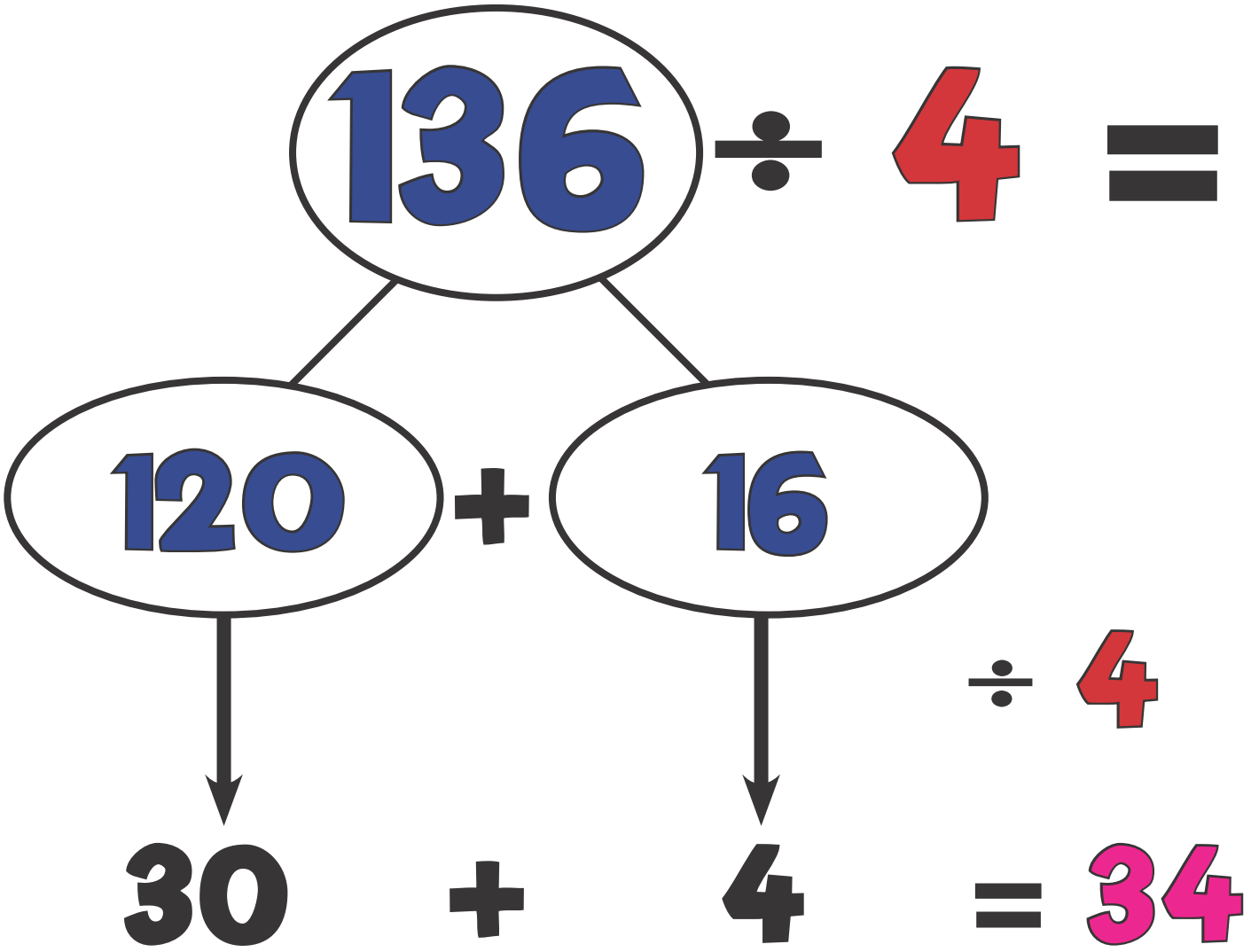
MD6a: Find the Hunk!

4



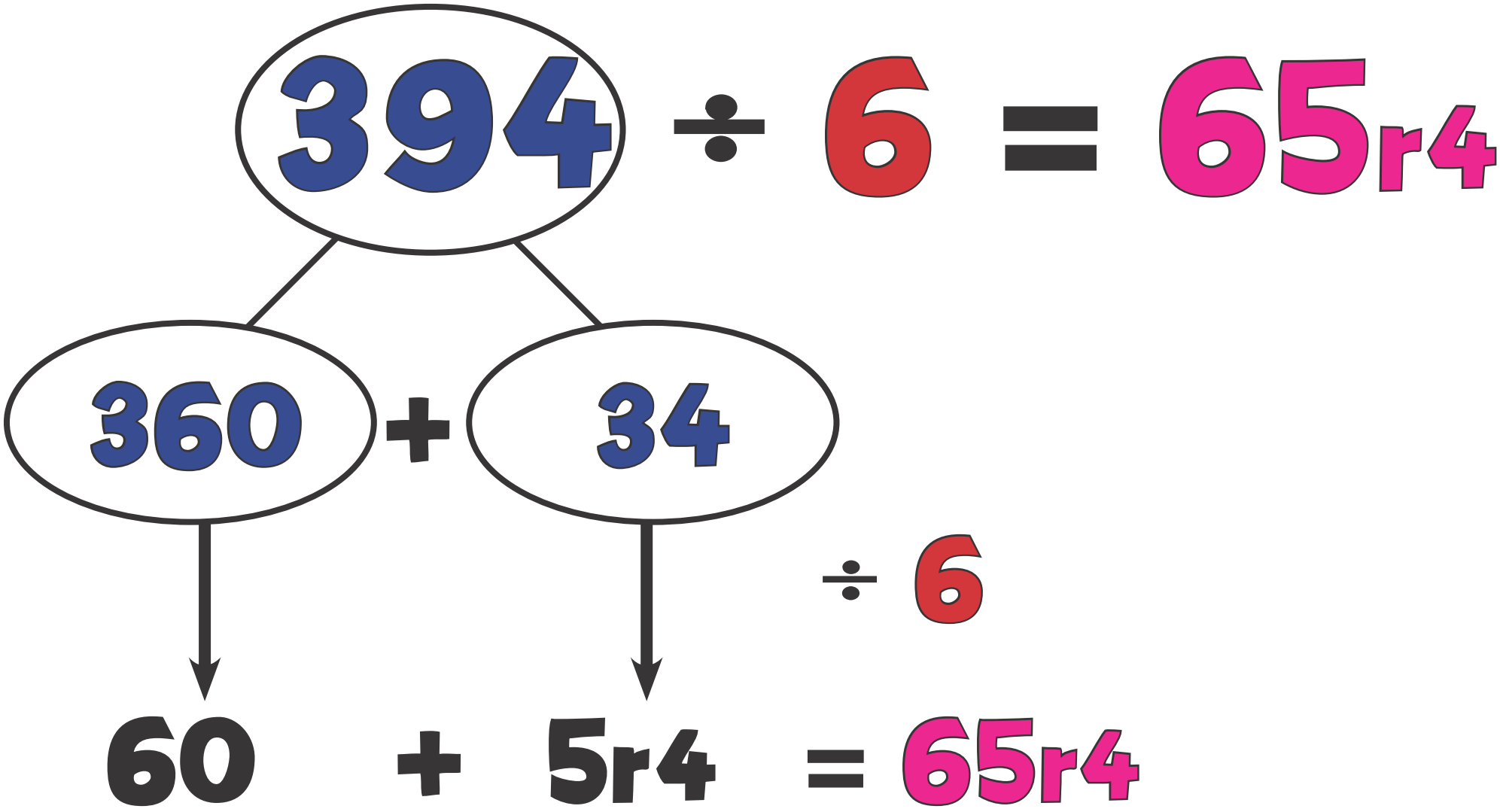
MD6b: Find the Hunk!

5



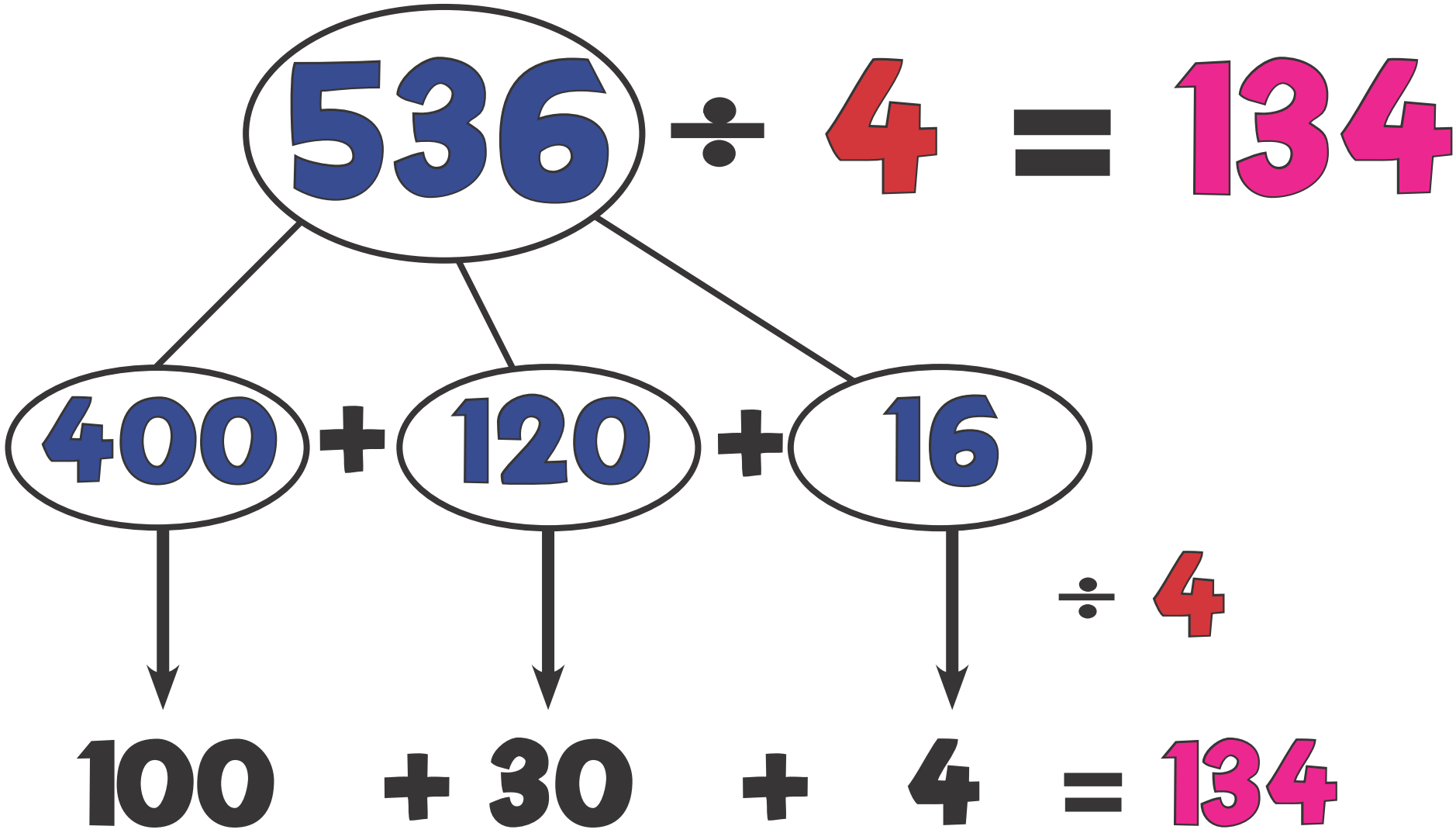
MD6c: Find the Hunk!

5



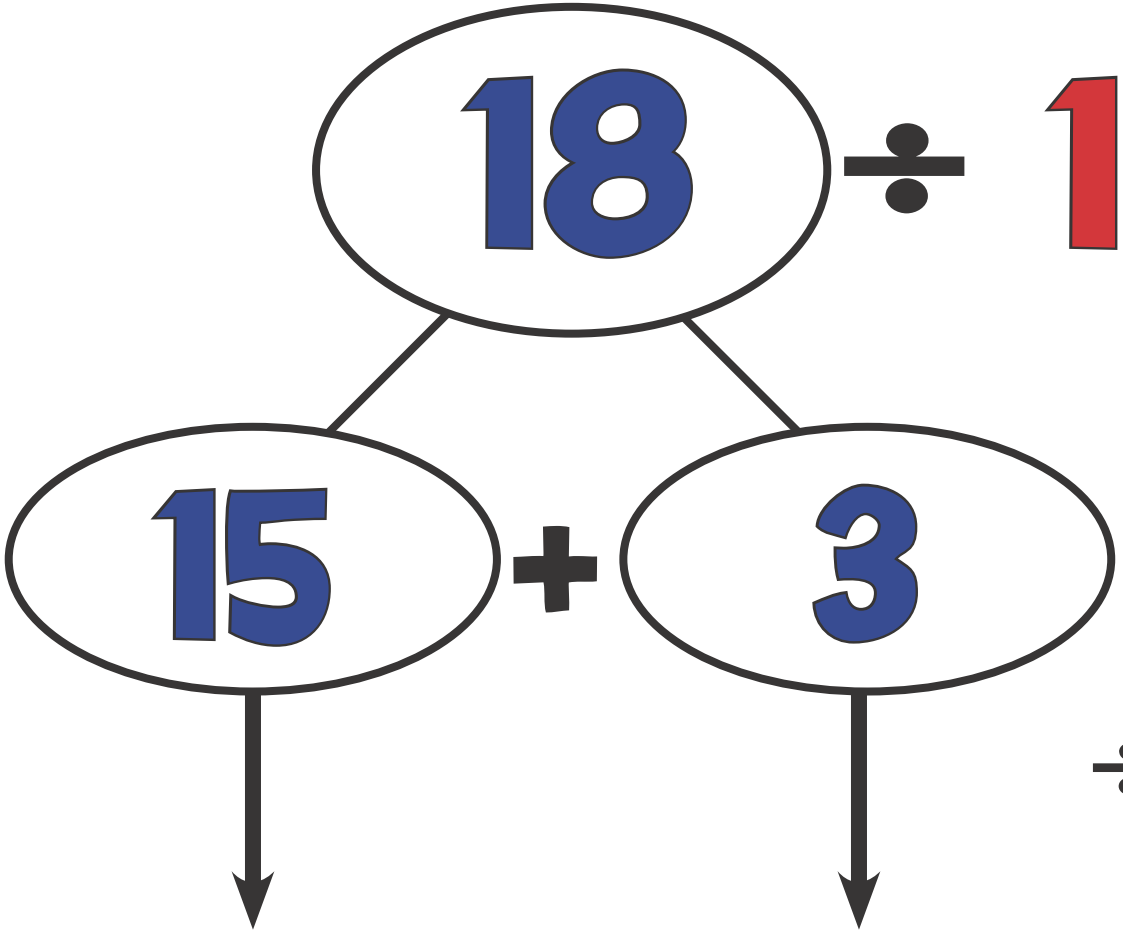
MD6d: Find the Hunk!

5/6



MD6e: Find the Hunk!

6



÷ 1.5 = 12

÷ 1.5

= 12

MD7: Jump (÷10)

2

10 1

80

÷10

8

MD7a: Jump (÷10)

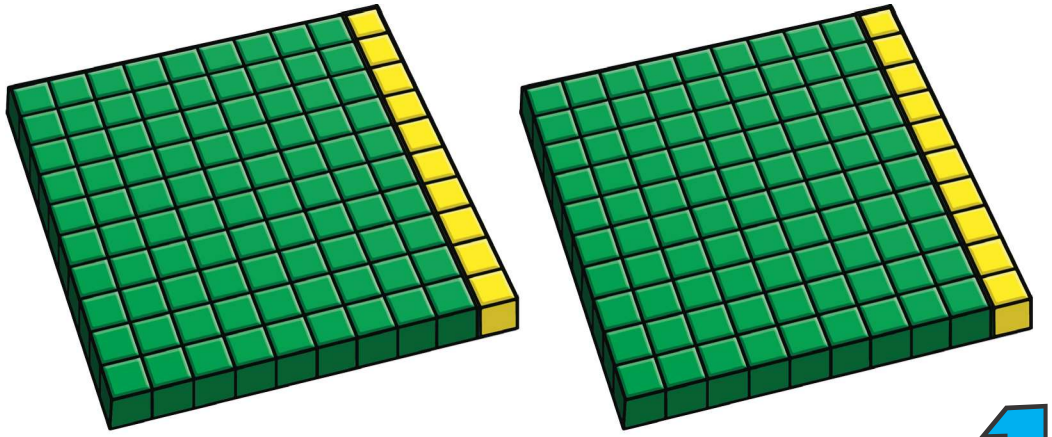
3

100	10	1
360		
	36	

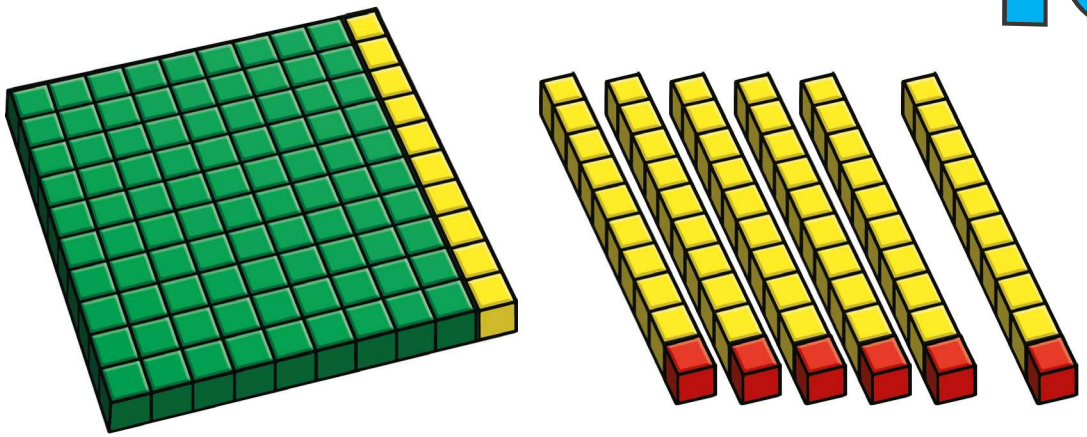
÷10

MD7a: Jump (÷10)

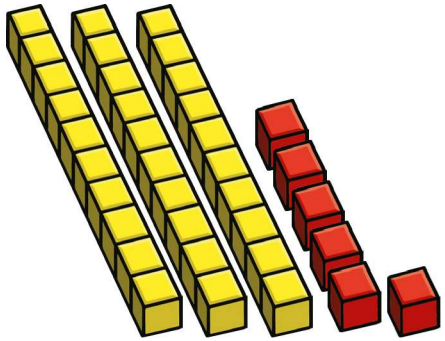
3 (Pictorial)



÷10



100	10	1
360		
	36	



MD7b: Jump (÷10/100)

4/5

÷10

÷100

1000 100 10 1

6300

630

63

MD7c: Jump (÷10/100/1000)

5/6

100 10 1 ■ $\frac{1}{10}$ $\frac{1}{100}$ $\frac{1}{1000}$

634

÷10 63.4

÷100 6.34

÷1000 0.634