Varied Fluency
Step 15: Reason from Known Facts

National Curriculum Objectives:

Mathematics Year 6: (6C8) Solve problems involving addition, subtraction, multiplication and division

Differentiation:

Developing Questions to support solving calculations using reasoning from known facts in whole numbers up to 1,000.
Expected Questions to support solving calculations using reasoning from known facts in whole numbers up to 10,000 and up to one decimal place.
Greater Depth Questions to support solving calculations using reasoning from known facts in whole numbers up to 100,000 and up to two decimal places.

More resources which follow the same small steps as White Rose.

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Varied Fluency – Reason from Known Facts

1a. Use this fact to complete the calculations.

300 ÷ 20 = 15

300	÷	2	=	
300	÷	20	=	
15	x	20	=	
30	÷		=	15
15	x	2	=	

D VF

1b. Use this fact to complete the calculations.

400 ÷ 40 = 10

40	÷	40	=	
4,000	÷	40	=	
100	x	4	=	
40	÷		=	40
40	x	10	=	

D VF

2a. If 8 x 110 = 880, what is:

a 8 x 11 =

b 80 x 11 =

c 80 x 110 =

D VF

2b. If 7 x 120 = 840, what is:

a 7 x 12 =

b 70 x 12 =

c 70 x 120 =

D VF

3a. True or false?

If 6 x 12 = 72 then 60 x 120 = 7,200.

D VF

3b. True or false?

If 5 x 12 = 60 then 5 x 24 = 600.

D VF

4a. Match each calculation to the correct answer.

a	3 x 200 =	6,000
b	30 x 2 =	600
c	30 x 200	60

D VF

4b. Match each calculation to the correct answer.

a	20 x 400 =	80
b	2 x 40 =	800
c	200 x 4	8,000

D VF

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Varied Fluency – Reason from Known Facts

5a. Use this fact to complete the calculations.

600 ÷ 20 = 30

60	÷	20	=	☐
6	÷	20	=	☐
30	x	20	=	☐
60	÷	☐	=	0.3
0.3	x	2	=	☐

E VF

5b. Use this fact to complete the calculations.

1,000 ÷ 20 = 50

10	÷	20	=	☐
100	÷	20	=	☐
50	x	20	=	☐
10	÷	☐	=	0.2
0.5	x	0.2	=	☐

E VF

6a. If 14 x 208 = 2,912, what is:

a 140 x 208 =

b 1.4 x 208 =

c 14 x 20.8 =

E VF

6b. If 16 x 189 = 3,024, what is:

a 160 x 189 =

b 1.6 x 189 =

c 16 x 18.9 =

E VF

7a. True or false?
If 21 x 125 = 2,265 then 2,100 x 125 = 226,500.

E VF

7b. True or false?
If 28 x 109 = 3,052 then 2,800 x 109 = 305,200.

E VF

8a. Match the calculation to the correct answer.

a	4.6 x 200 =	9.2
b	460 x 0.2 =	920
c	4.6 x 2	92

E VF

8b. Match the calculation to the correct answer.

a	3.7 x 200 =	74
b	370 x 0.2 =	7.4
c	3.7 x 2 =	740

E VF

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Varied Fluency – Reason from Known Facts

9a. Use this fact to complete the calculations.

900 ÷ 20 = 45

900	÷	2	=	
90	÷	200	=	
0.45	x	20	=	
90	÷		=	4.5
4.5	x	2	=	

GD VF

9b. Use this fact to complete the calculations.

700 ÷ 20 = 35

70	÷	20	=	
700	÷	20	=	
3,500	x	20	=	
7	÷		=	0.35
0.35	x	0.2	=	

GD VF

10a. If 150 x 135 = 20,250, what is:

a 15 x 1,350 =

b 1.5 x 135 =

c 0.15 x 135 =

GD VF

10b. If 125 x 250 = 31,250, what is:

a 12.5 x 250 =

b 125 x 0.25 =

c 1.25 x 25 =

GD VF

11a. True or false?
If 215 x 320 = 68,800 then 2,150 x 32 = 68,800

GD VF

11b. True or false?
If 280 x 115 = 32,200 then 2.8 x 1.15 = 32.2

GD VF

12a. Match the calculation to the correct answer.

a	0.37 x 4,000 =	148
b	37 x 0.4 =	1,480
c	370 x 0.4	14.8

GD VF

12b. Match the calculation to the correct answer.

a	4.75 x 200 =	9.5
b	47.5 x 0.2 =	95
c	4,750 x 0.02 =	950

GD VF

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Varied Fluency – Reason from Known Facts

Developing

1a. 150; 15; 300; 2; 30
1b. 1; 100; 400; 1; 400
2a. 88; 880; 8,800
2b. 84; 840; 8,400
3a. True
3b. False, 5 x 24 = 120
4a. a = 600; b = 60; c = 6,000
4b. a = 8,000; b = 80; c = 800

Expected

5a. 3; 0.3; 600; 200; 0.6
5b. 0.5; 5; 1,000; 50; 0.1
6a. 29,120; 291.2; 291.2
6b. 30,240; 302.4; 302.4
7a. False, 2,100 x 125 = 262,500
7b. True
8a. a = 920; b = 92; c = 9.2
8b. a = 740; b = 74; c = 7.4

Greater Depth

9a. 450; 0.45; 9; 20; 9
9b. 3.5; 35; 70,000; 20; 0.07
10a. 20,250; 202.5; 20.25
10b. 3,125; 31.25; 31.25
11a. True
11b. False, 2.8 x 1.15 = 3.22
12a. a = 1,480; b = 14.8; c = 148
12b. a = 950; b = 9.5; c = 95

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Reasoning and Problem Solving
Step 15: Reason from Known Facts

National Curriculum Objectives:

Mathematics Year 6: (6C8) Solve problems involving addition, subtraction, multiplication and division

Differentiation:

Questions 1, 4 and 7 (Problem Solving)
Developing Solve, correct and explain errors in calculations involving whole numbers up to 1,000.
Expected Solve, correct and explain errors in calculations involving whole numbers up to 10,000 and up to one decimal place.
Greater Depth Solve, correct and explain errors in calculations involving whole numbers up to 100,000 and up to two decimal places.

Questions 2, 5 and 8 (Reasoning)
Developing Determine whether a statement is correct or incorrect and explain why (involving whole numbers up to 1,000).
Expected Determine whether a statement is correct or incorrect and explain why (involving whole numbers up to 10,000 and up to one decimal place).
Greater Depth Determine whether a statement is correct or incorrect and explain why (involving whole numbers up to 100,000 and up to two decimal places).

Questions 3, 6 and 9 (Reasoning)
Developing Find the odd one out involving whole numbers up to 1,000.
Expected Find the odd one out involving whole numbers up to 10,000 and up to one decimal place.
Greater Depth Find the odd one out involving whole numbers up to 100,000 and up to two decimal places.

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Reasoning and Problem Solving – Reason from Known Facts

1a. Correct the mistakes in the calculations below.

a) 25 x 40 = 1,000

b) 25 x 4 = 100

c) 1,000 ÷ 250 = 4

d) 1,000 ÷ 40 = 250

D PS

1b. Correct the mistakes in the calculations below.

a) 150 x 6 = 900

b) 15 x 60 = 900

c) 900 ÷ 60 = 150

d) 900 ÷ 15 = 60

D PS

2a. Alice is using 45 x 2 = 90 to solve other calculations.

She says,

45 x 20 will give the same answer as 4,500 x 2. They both equal 900.



Alice

Is she correct? Explain how you know.

D R

2b. Ben is using 15 x 4 = 60 to solve other calculations.

He says,

15 x 40 will give the same answer as 150 x 4. They both equal 600.



Ben

Is he correct? Explain how you know.

D R

3a. Which is the odd one out?

a) 60 x 20 b) 60 x 2

c) 6 x 200 d) 600 x 2

Explain how you know.

D R

3b. Which is the odd one out?

a) 30 x 50 b) 5 x 300

c) 50 x 30 d) 3 x 50

Explain how you know.

D R

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Reasoning and Problem Solving – Reason from Known Facts

4a. Correct the mistakes in the calculations below.

a 6.5 x 40 = 260

b 65 x 400 = 2,600

c 2,600 ÷ 6.5 = 400

d 260 ÷ 65 = 4

E PS

4b. Correct the mistakes in the calculations below.

a 3.5 x 50 = 175

b 35 x 50 = 1,750

c 1,750 ÷ 35 = 500

d 175 ÷ 3.5 = 50

E PS

5a. Isabel is using 220 x 30 = 6,600 to solve other calculations.

She says,

2.2 x 300 will give the same answer as 220 x 30. They both equal 660.



Isabel

Is she correct? Explain how you know.

E R

5b. Chuan is using 350 x 30 = 10,500 to solve other calculations.

He says,

3.5 x 300 will give the same answer as 350 x 3. They both equal 1,050.



Chuan

Is he correct? Explain how you know.

E R

6a. Which is the odd one out?

a 0.7 x 3,000 b 7 x 30

c 700 x 0.3 d 70 x 3

Explain how you know.

E R

6b. Which is the odd one out?

a 0.5 x 4,000 b 50 x 40

c 500 x 0.4 d 5 x 400

Explain how you know.

E R

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Reasoning and Problem Solving – Reason from Known Facts

7a. Correct the mistakes in the calculations below.

a 3.25 x 40 = 130

b 325 x 4 = 1,300

c 1,300 ÷ 3.25 = 40

d 13,000 ÷ 400 = 32.5

GD PS

7b. Correct the mistakes in the calculations below.

a 2.75 x 40 = 110

b 275 x 40 = 11,000

c 1,100 ÷ 400 = 2.75

d 110 ÷ 27.5 = 0.4

GD PS

8a. Steph is using 425 x 20 = 8,500 to solve other calculations.

She says,

4.25 x 200 will give the same answer as 425 x 20. They both equal 8,500.



Steph

Is she correct? Explain how you know.

GD R

8b. Johnny is using 225 x 40 = 9,000 to solve other calculations.

He says,

2.25 x 400 will give the same answer as 225 x 4. They both equal 900.



Johnny

Is he correct? Explain how you know.

GD R

9a. Which is the odd one out?

a 0.75 x 2,000 b 75 x 20

c 750 x 0.2 d 7.5 x 200

Explain how you know.

GD R

9b. Which is the odd one out?

a 0.15 x 6,000 b 15 x 60

c 1,500 x 0.6 d 1.5 x 6,000

Explain how you know.

GD R

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Reasoning and Problem Solving – Making Equal Groups

Developing

1a. d is incorrect. It should be: 1,000 ÷ 40 = 25
1b. c is incorrect. It should be: 900 ÷ 60 = 15
2a. She is incorrect. 45 x 20 = 900 and 4,500 x 2 = 9,000.
2b. He is correct.
3a. b is the odd one out because it has an answer of 120, all the others have an answer of 1,200.
3b. d is the odd one out because it has an answer of 150, all the others have an answer of 1,500.

Expected

4a. b is incorrect. It should be: 65 x 400 = 26,000
4b. c is incorrect. It should be: 1,750 ÷ 35 = 50
5a. She is incorrect. 2.2 x 300 = 660 and 220 x 30 = 6,600.
5b. He is correct.
6a. a is the odd one out because it has an answer of 2,100, all the others have an answer of 210.
6b. c is the odd one out because it has an answer of 200, all the others have an answer of 2,000.

Greater Depth

7a. c is incorrect. It should be: 1,300 ÷ 3.25 = 400
7b. d is incorrect. It should be: 110 ÷ 27.5 = 4
8a. She is incorrect. 4.25 x 200 = 850 and 425 x 20 = 8,500.
8b. He is correct.
9a. c is the odd one out because it has an answer of 150, all the others have an answer of 1,500.
9b. d is the odd one out because it has an answer of 9,000, all the others have an answer of 900.

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