

# Varied Fluency

## Step 10: Enumerate Possibilities

### National Curriculum Objectives:

Mathematics Year 6: (6A5) [Enumerate possibilities of combinations of two variables](#)

### Differentiation:

**Developing** Questions to support using addition and subtraction, and multiplication by 2 to enumerate possibilities.

**Expected** Questions to support using all 4 operations and whole numbers, with some decimals and fractions to enumerate possibilities.

**Greater Depth** Questions to support using all 4 operations and whole, decimal and negative numbers and fractions to enumerate possibilities.

More [Year 6 Algebra](#) resources.

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## Enumerate Possibilities

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1a. True or false? Gizella has worked this out correctly.

$$a = 8$$

$$a + b = 17$$

$$c + b = 21$$

$$b = 9 \quad c = 12$$



VF

1b. True or false? Theo has worked this out correctly.

$$b = 9$$

$$b \times a = 18$$

$$c - b = 16$$

$$a = 2 \quad c = 7$$



VF

2a. Use the table to find all the possible combinations for these two variables.

$$a - b = 5$$

12	5	3	7
15	20	10	8



VF

2b. Use the table to find all the possible combinations for these two variables.

$$d + g = 18$$

10	1	12	6
17	8	14	4



VF

3a. List three possible values for  $a$  and  $b$ , where  $c = 18$

$$2a + b = c$$



VF

3b. List three possible values for  $c$  and  $d$ , where  $e = 12$ .

$$c - 2d = e$$



VF

4a. Esther wants to buy some sweets. Some are 20p, some are 10p. She can spend 80p exactly. What combinations of sweets could she buy?



VF

4b. Hadi wants to buy some pencils. Some are 10p, some are 20p. He can spend £1 exactly. What combinations of pencils could he buy?



VF

## Enumerate Possibilities

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5a. True or false? Evie has worked this out correctly.

$$a = 12$$

$$a + b = 20$$

$$c + b = 35$$

$$b = 8 \quad c = 25$$



VF

5b. True or false? George has worked this out correctly.

$$b = 4$$

$$b \times a = 32$$

$$c - b = 10.5$$

$$a = 8 \quad c = 6.5$$



VF

6a. Use the table to find all the possible combinations for these two variables.

$$x - y = 11.5$$

13.5	15.5	7.5	2
19	5.5	17	4



VF

6b. Use the table to find all the possible combinations for these two variables.

$$x + y = 18.5$$

13.5	14.5	17.5	1
17	5	1.5	4



VF

7a. List three possible values for  $a$  and  $b$ , where  $c = 19.5$

$$3a + b = c$$



VF

7b. List three possible values for  $c$  and  $d$ , where  $e = 20$

$$4c - d = e$$



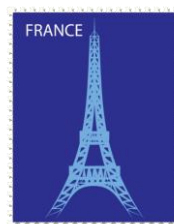
VF

8a. Deanna wants to buy some cards. Some are 15p, some are 20p. She can spend £1.50 exactly. What combinations of trading cards could she buy?



VF

8b. Arlo wants to buy some stamps. Some are 12p, some are 10p. He can spend £1.30 exactly. What combinations of stamps could he buy?



VF

## Enumerate Possibilities

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9a. True or false? Cheyanne has worked this out correctly.

$$x = 12.5$$

$$x + y = 28$$

$$v + y = 20.5$$

$$y = 15 \quad v = 5.5$$



VF

9b. True or false? Khaleed has worked this out correctly.

$$t = 0.5$$

$$t \times s = 4$$

$$t - y = -6.5$$

$$s = 4 \quad y = 6.5$$



VF

10a. Use the table to find all the possible combinations for these two variables.

$$x - y = -5.5$$

10	1	12	0.5
-4.5	6	6.5	4.5



VF

10b. Use the table to find all the possible combinations for these two variables.

$$2x + y = 22.5$$

11	0.5	9	6.5
2.5	10	4.5	8



VF

11a. List three possible values for  $c$  and  $d$ , where  $e = 25$

$$3c + 2d = e$$



VF

11b. List three possible values for  $c$  and  $d$ , where  $e = 3$

$$2c - 2d = e$$



VF

12a. Heidi wants to buy some charms. Some are £1.20, some are £2.00. She can spend £12.00 exactly. What combinations of charms could she buy?



VF

12b. Flynn wants to buy some stickers. Some are £1.20, some are £1.00. He can spend £15.00 exactly. What combinations of stickers could he buy?



VF

## Varied Fluency Enumerate Possibilities

### Developing

- 1a. True  
2a.  $20 - 15$ ;  $10 - 5$ ;  $8 - 3$ ;  $12 - 7$ ;  $15 - 10$   
3a. Various possible answers, for example:  
 $a = 5$ ,  $b = 8$ ;  $a = 7$ ,  $b = 4$ ;  $a = 8$ ,  $b = 2$   
4a. Various possible answers, for example:  
 $20 \times 4 + 10 \times 0 = 80p$ ;  $20 \times 2 + 10 \times 4 = 80p$ ;  
 $20 \times 1 + 10 \times 6 = 80p$ .

### Expected

- 5a. False.  $c = 27$   
6a.  $13.5 - 2$ ;  $15.5 - 4$ ;  $19 - 7.5$ ;  $17 - 5.5$   
7a. Various possible answers, for example:  
 $a = 3$ ,  $b = 10.5$ ;  $a = 2$ ,  $b = 13.5$ ;  $a = 3.5$ ,  
 $b = 9$   
8a. Various possible answers, for example:  
 $15 \times 2 + 20 \times 6 = £1.50$ ;  $15 \times 6 + 20 \times 3 =$   
 $£1.50$ ;  $15 \times 10 + 20 \times 0 = £1.50$

### Greater Depth

- 9a. False.  $y = 15.5$ ,  $v = 5$   
10a.  $4.5 - 10$ ;  $0.5 - 6$ ;  $6.5 - 12$ ;  $-4.5 - 1$   
11a. Various possible answers,  
for example:  $c = 8$ ,  $d = 0.5$ ;  $c = 6$ ,  $d = 3.5$ ;  
 $c = 4$ ,  $d = 6.5$   
12a. Various possible answers, for  
example:  $£1.20 \times 10 + £2.00 \times 0 = £12.00$ ;  
 $£1.20 \times 0 + £2.00 \times 6 = £12.00$ ;  
 $£1.20 \times 5 + £2.00 \times 3 = £12.00$

## Varied Fluency Enumerate Possibilities

### Developing

- 1b. False.  $c = 25$   
2b.  $10 + 8$ ;  $17 + 1$ ;  $12 + 6$ ;  $14 + 4$   
3b. Various possible answers, for example:  
 $c = 20$ ,  $d = 4$ ;  $c = 18$ ,  $d = 3$ ;  $c = 22$ ,  $d = 5$   
4b. Various possible answers, for example:  
 $10 \times 10 + 20 \times 0 = £1$ ;  $10 \times 0 + 20 \times 5 = £1$ ;  
 $10 \times 6 + 20 \times 2 = £1$

### Expected

- 5b. False.  $c = 14.5$   
6b.  $13.5 + 5$ ;  $14.5 + 4$ ;  $17.5 + 1$ ;  $17 + 1.5$   
7b. Various possible answer, for example:  
 $c = 6$ ,  $d = 4$ ;  $c = 7$ ,  $d = 8$ ;  $c = 5.5$ ,  $d = 2$   
8b. Various possible answers, for example:  
 $12 \times 0 + 10 \times 13 = £1.30$ ;  $12 \times 10 + 10 \times 1 =$   
 $£1.30$ ;  $12 \times 5 + 10 \times 7 = £1.30$

### Greater Depth

- 9b. False.  $s = 8$ ,  $y = 7$   
10b.  $2 \times 11 + 0.5$ ;  $2 \times 10 + 2.5$ ;  $2 \times 9 + 4.5$ ;  $2$   
 $\times 8 + 6.5$   
11b. Various possible answers,  
for example:  $a = 13$ ,  $d = 11.5$ ;  $a = 10$ ,  
 $d = 8.5$ ;  $a = 8$ ;  $d = 6.5$   
12b. Various possible answers, for  
example:  $£1.20 \times 5 + £1.00 \times 9 = £15.00$ ;  
 $£1.20 \times 10 + £1.00 \times 3 = £15.00$ ;  
 $£1.20 \times 0 + £1.00 \times 15 = £15.00$