GCSE HIGHER · REVISION MAT 3

Counting strategies

1 List all the two-digit numbers that can be made from 3, 6 and 8, using each digit at most once.

2 A menu has 3 starters, 5 mains and 4 desserts.

How many 3-course meals are possible?

3 Amy says rolling two dice gives 12 outcomes.

Explain why she is wrong.

4 A lock has 3 dials, each 0 to 9.

A thief tries one code every 5 seconds.

What is the longest it could take, in minutes?

5 Show that 6 runners can finish 1st, 2nd and 3rd in 120 ways.

6 A code is 2 different vowels followed by a digit.

How many codes are possible?

7 Show that 15 pairs of different toppings can be chosen from 6 toppings.

8 A code uses 4 different digits written in increasing order.

How many codes are possible?

Mr&Mrs MATHS

ANSWERS · REVISION MAT 3

Counting strategies

1 **36, 38, 63, 68, 83, 86**

2 $3 \times 5 \times 4$

60

3 6 outcomes for each die

$6 \times 6 = 36$

4 1000 codes × 5 s = 5000 s

83.3 minutes

5 $6 \times 5 \times 4$

$= 120$

6 $5 \times 4 \times 10$

200

7 $6 \times 5 = 30$ ordered pairs

$30 \div 2 = 15$

8 Choosing 4 digits fixes the order.

$$\frac{10 \times 9 \times 8 \times 7}{4 \times 3 \times 2 \times 1}$$

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