

- If you have any difficulty with these solutions, please contact your teacher before continuing.

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- a. Several solutions to this question are possible. Contact your teacher to confirm that your answer is correct.

Organized List:

1. red sweater and red shorts
2. red sweater and black shorts
3. red sweater and white shorts
4. *red sweater and red/black shorts* ✓
5. white sweater and red shorts
6. white sweater and black shorts
7. white sweater and white shorts
8. *white sweater and red/black shorts* ✓
9. black sweater and red shorts
10. black sweater and black shorts
11. black sweater and white shorts
12. *black sweater and red/black shorts* ✓

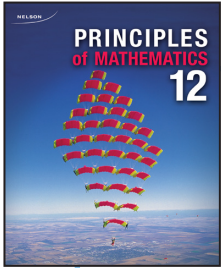
Outcome Table (style 1):

Sweater	Shorts
red	red
white	black
black	red/black
	white

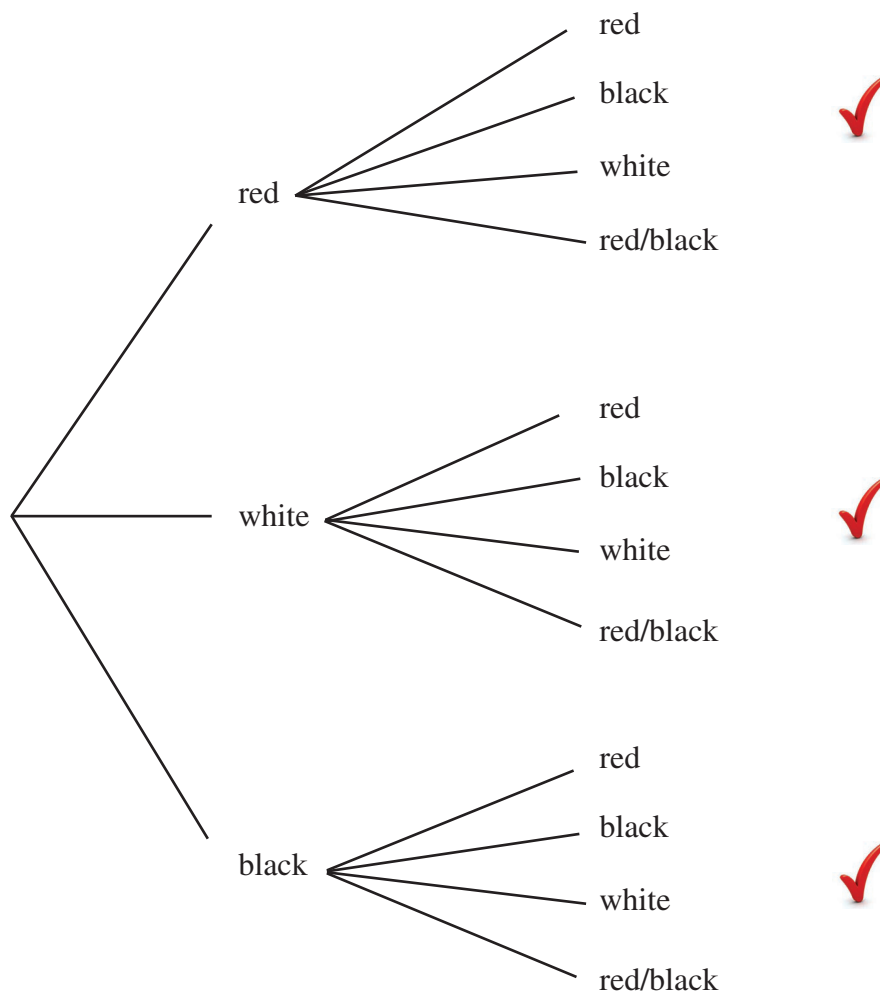


Outcome Table (style 2):

		Shorts			
Sweater		red	black	red/black	white
	red	RR	RB	RRB	RW
	white	WR	WB	WRB	WW
	black	BR	BB	BRB	BW

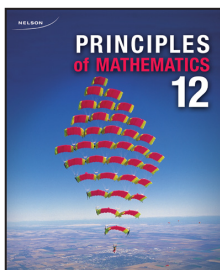


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Tree Diagram:

- b. Number of outcomes = (number of sweater options) \times (number of shorts options)

$$\text{Number of outcomes} = (3) \times (4) = 12$$



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Lock A:

Number of codes with repetition = Number of digits on wheel 1 \times Number of digits on wheel 2 \times Number of digits on wheel 3 \times Number of digits on wheel 4 \times Number of digits on wheel 5

Number of codes with repetition = $10 \times 10 \times 10 \times 10 \times 10 = 100\,000$

Lock B:

Number of codes without repetition = Number of digits on wheel 1 \times Number of remaining digits on wheel 2 \times Number of remaining digits on wheel 3 \times Number of remaining digits of wheel 4 \times Number of remaining digits on wheel 5

Number of codes without repetition = $10 \times 9 \times 8 \times 7 \times 6 = 30\,240$

Lock A is more secure because there are more possibilities.

A person trying to crack the code on lock A on the first attempt has a 1 : 100 000 chance of getting it right; a person trying to crack the code on lock B has a greater chance of getting it right, 1 : 30 240. Lock A has almost 70 000 more possible codes than lock B, so it is more secure.