

# Solve Ratio and Proportion Problems Involving Unequal Quantities


In a supermarket, washing powder is sold in three sizes:

Buy 4, get one free!




Standard 2.5kg  
Price £3

$\frac{1}{5}$  off original price



Large 10kg  
Price £10

£1.50 off a box



Mega 20kg  
Price £18

**What would be the cheapest way to buy 20kg of washing powder?**

### Standard:

$20\text{kg} \div 2.5\text{kg}$   
 $= 8$  boxes needed,  
 $8 - 2$  (free)  
 $= 6$  boxes  
 $6 \times £3 =$   
**£18 for 20kg**

### Large:

$\frac{1}{5}$  of £10 =  $10 \div 5$   
 $= £2$  (reduction)  
 $£10 - £2 = £8$ ;  
 2 boxes needed:  
 $£8 \times 2 =$   
**£16 for 20kg**

### Mega:

$£18 - £1.50 =$   
**£16.50 for 20kg**

The problem can be solved using bar modelling.

Standard	£3	£3	£3	£3	£3	£3	£3	£3	£18
	£9			free	£9			free	$£9 \times 2$
Large	£10				£10				£16
	£2	£2	£2	£2	£2	£2	£2	£2	$£8 \times 2$
Mega	£18								£16.50
	£16.50							£1.50	$£18 - £1.50$

**So the best way to buy 20kg of washing powder would be 2 boxes of large for £16.**