



**Advanced Mathematics  
Support Programme®**

# Linear Programming

A firm sells bags of sugar in two sizes, 1 kg and 500 g.

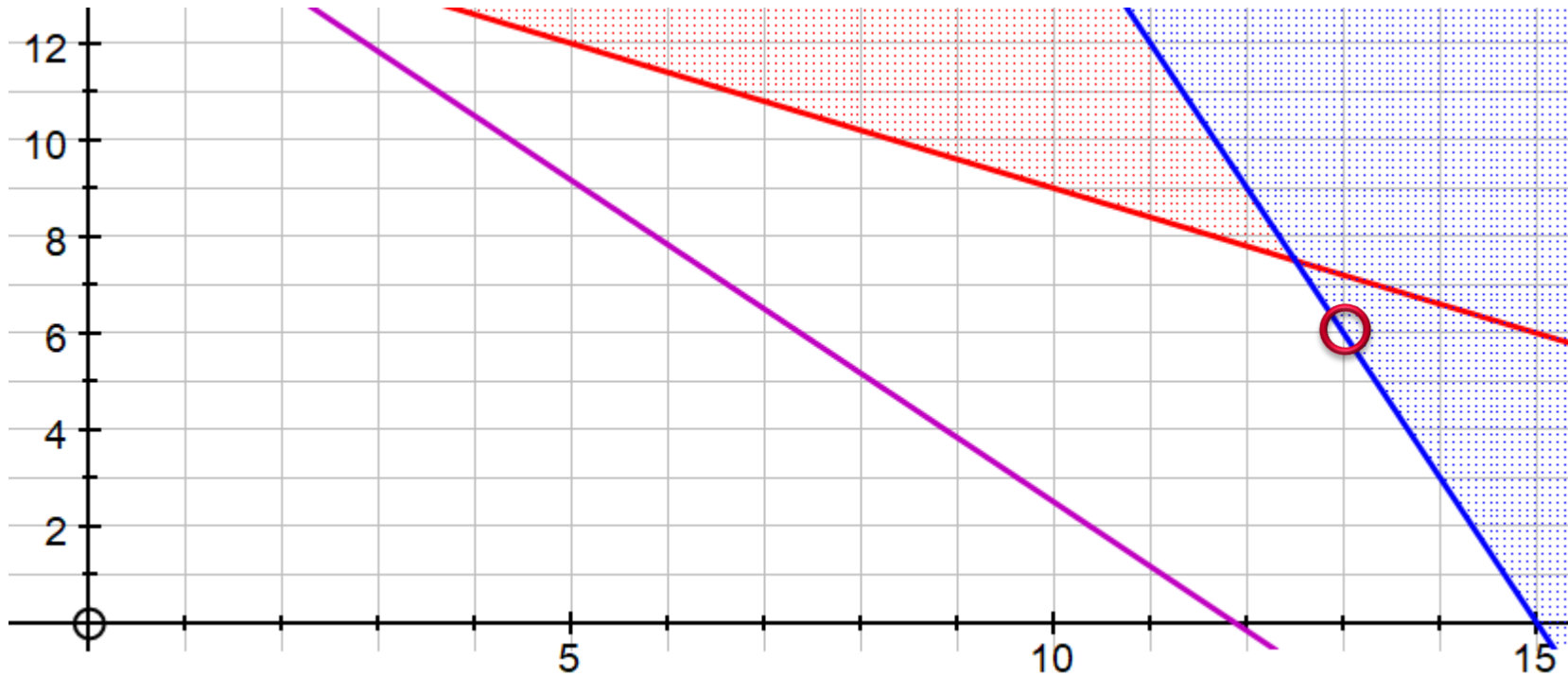
In one day the factory can process 5000 kg of sugar and pack a maximum of 7000 bags.

Retailers are prepared to order up to 4000 large bags and up to 6000 small bags each day.

The firm makes a profit of 8p on each small bag and 20p on each large bag.

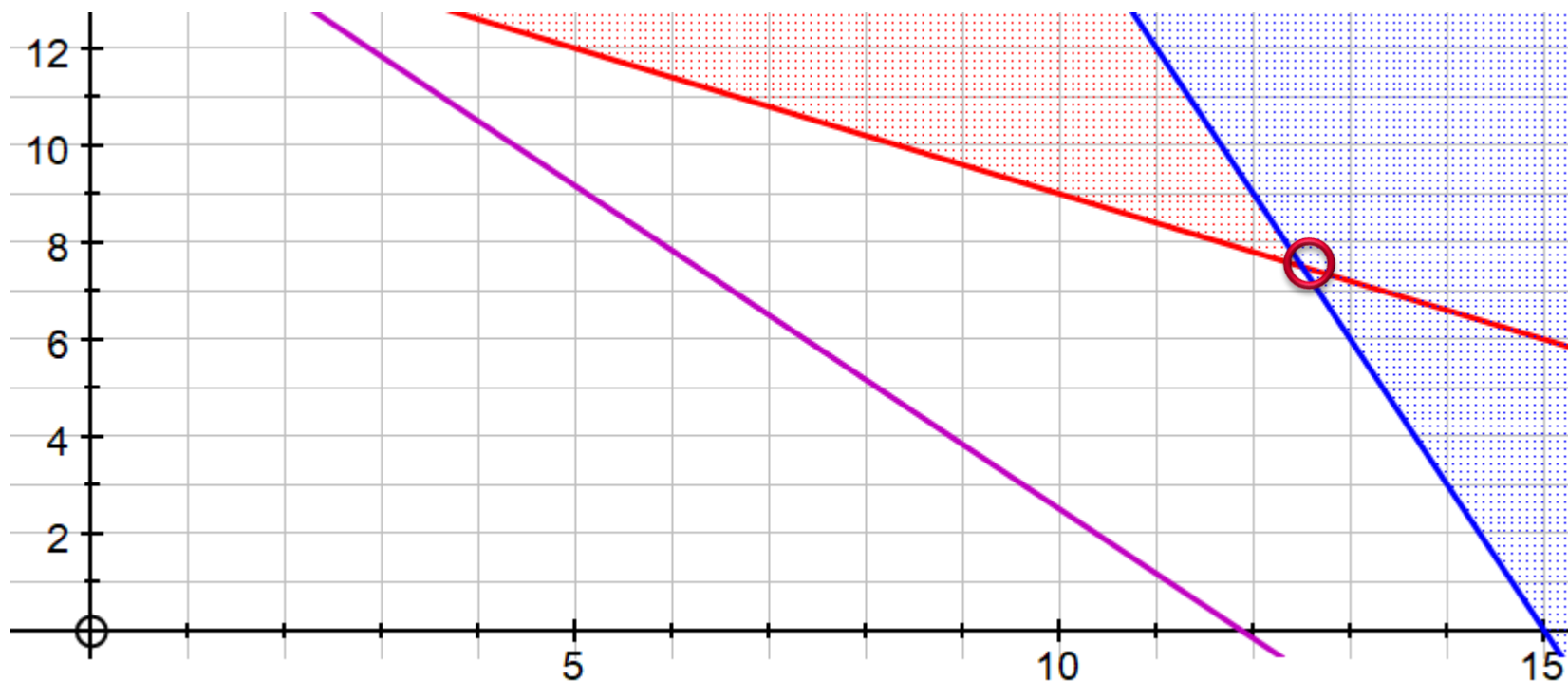
How many of each type of bag should they produce to maximise profit?

# Problem 1: Initial solution



13 badgers and 6 ducks → Profit of £280

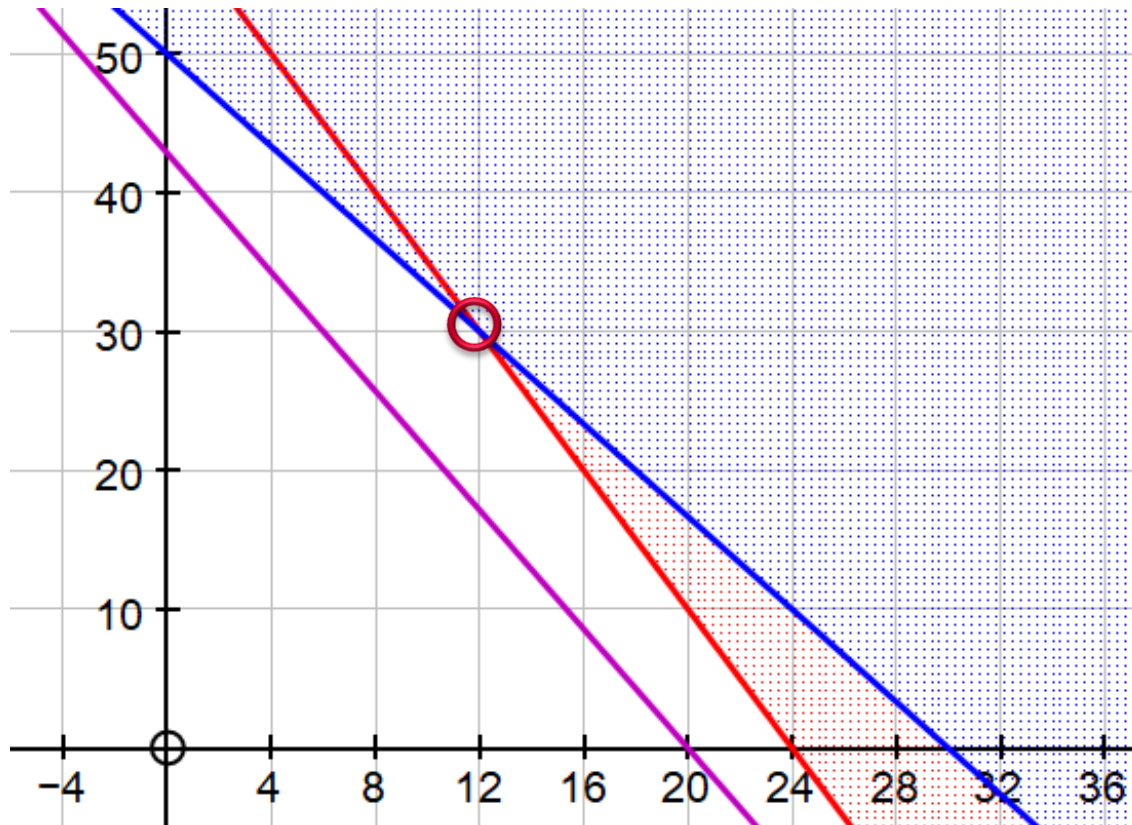
# Problem 1: Refined solution



12.5 badgers and 7.5 ducks

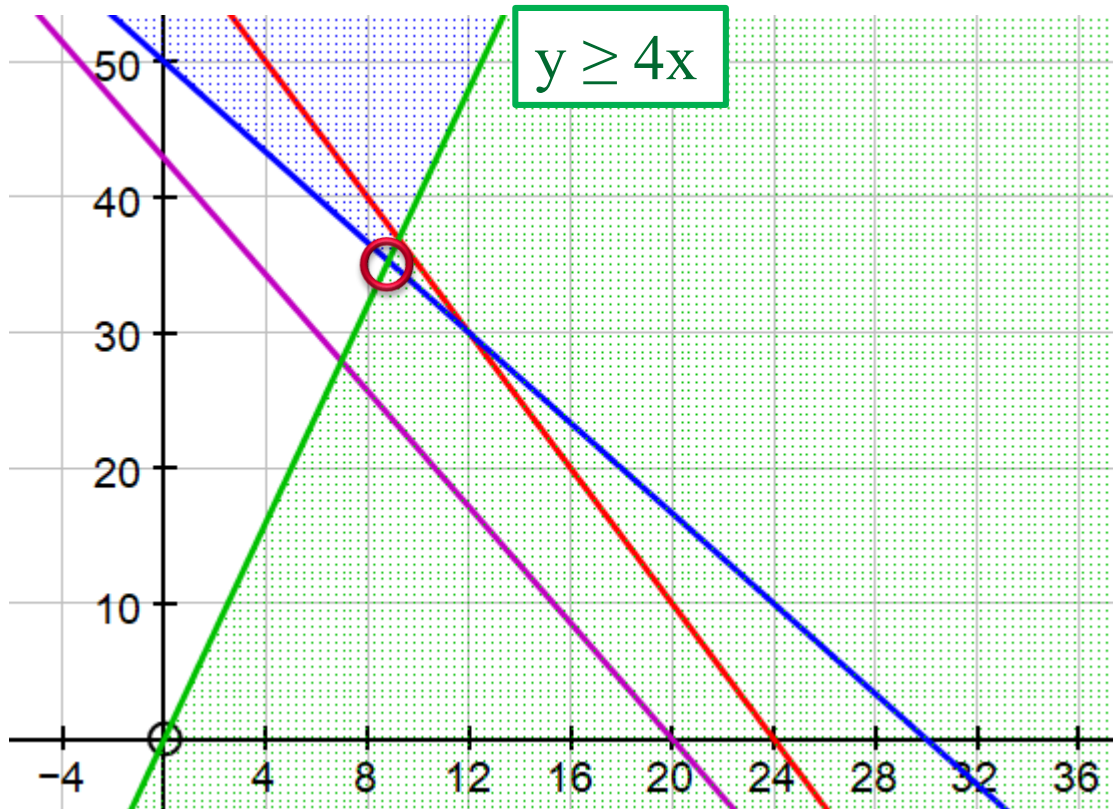
25 badgers and 15 ducks over 2 days → £290 per day

# Problem 2: Initial solution



12 tables  
 30 chairs  
 → £3900 profit

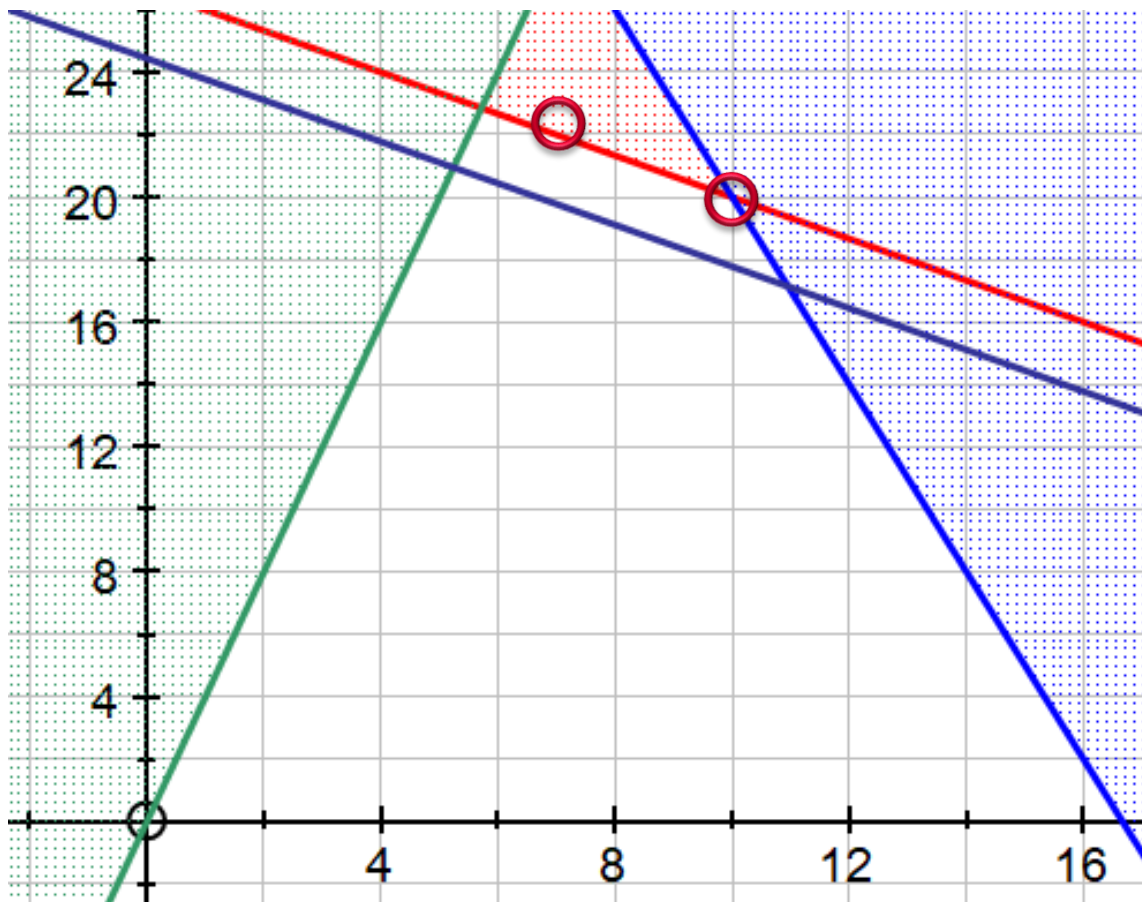
# Problem 2: Refined solution



8 tables  
 36 chairs  
 → £3720 profit

The stock is more likely to sell with at least four chairs per table.

# Problem 3



10 elegant  
 20 bloomer  
 → £120 profit

7 elegant  
 22 bloomer  
 → £120 profit

Which should  
 Florrie choose?  
 What factors might  
 influence her  
 decision?

# About the AMSP

- A government-funded initiative, managed by MEI, providing national support for teachers and students in all state-funded schools and colleges in England.
- It aims to increase participation in AS/A level Mathematics and Further Mathematics, and Core Maths, and improve the teaching of these qualifications.
- Additional support is given to those in priority areas to boost social mobility so that, whatever their gender, background or location, students can choose their best maths pathway post-16, and have access to high quality maths teaching.



# Contact the AMSP



01225 716 492



*admin@amsp.org.uk*



*amsp.org.uk*



Advanced\_Maths