Chapter 2 Problems of the Week Answers

1. a)

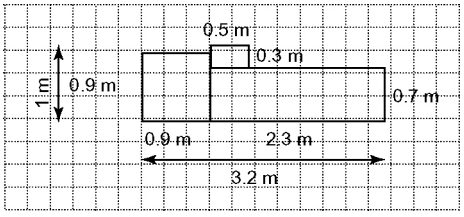
Ingredient	Amount Purchased	Amount Per Batch	Number of Possible Batches	Cost
Flour	2.5 kg	0.5 kg	5.00	$6.99
Walnuts	0.2 kg	0.12 kg	1.67	$3.99
White sugar	2 kg	0.7 kg	2.86	$3.49
Brown sugar	1 kg	0.8 kg	**1.25**	$2.99
Butter	0.5 kg	0.25 kg	2.00	$3.99
Chocolate chips	0.5 kg	0.4 kg	**1.25**	$3.99
Eggs	12	2	6.00	$3.49

Making 1.25 batches would use up all of the brown sugar and chocolate chips.

b) Total cost of ingredients: $28.93;
total received from selling cookies:
1.25 × 60 × 0.75 = $56.25;
maximum profit: $56.25 − $28.93 = $27.32

2. Total mass × 2 months = 39.3 kg. Average mass per month = 19.65 kg. 19.65 × 12 = 235.8. Based on the monthly average, the projected annual total mass of recycling materials is 235.8 kg.

3. a) Answers will vary. Using grid paper to determine the most efficient placement of shapes is an effective strategy. To use the material most efficiently, the rectangle should be 1 m wide and 3.2 m long.



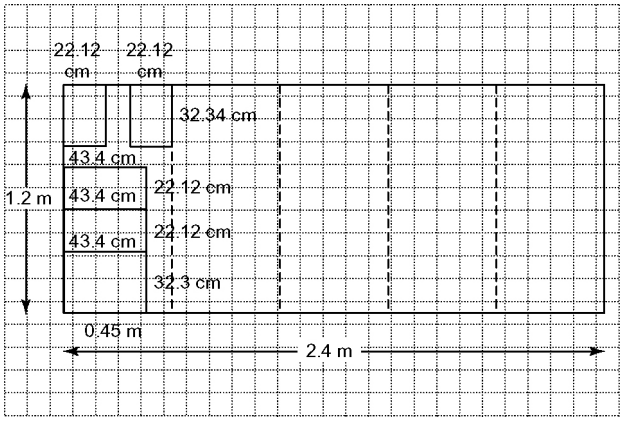
b) 3.2 m **c)** $17.92

4. a) Average height per player: 2.28 m; Average mass per player: 120.24 kg

b) Answers may vary. Examples:

- Yes, it is possible. Yao Ming, an NBA player, is 2.3 m tall and has a mass of 141 kg.
- Yes and no. It *is* possible to continue to grow like this for a certain number of years; however, after a few more years, the average height will suggest that some players are taller than is currently true.

5. a) Answers will vary. Using grid paper to determine the most efficient placement of the shapes for one drawer is an effective strategy. One possible answer is that the pieces for one drawer will fit on a piece of plywood with a width of 1.2 m and a length of 0.45 m (with some room to spare), if they are placed in the same orientation as the plywood.

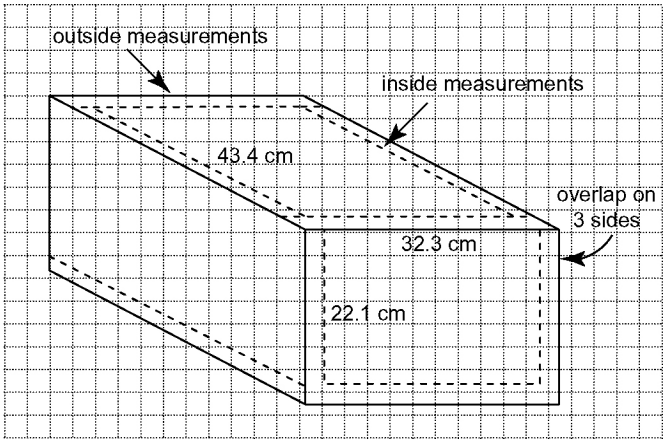


Remind students to consider the width of the plywood when determining the size of each piece of wood. The diagram that follows includes the adjustments that need to be made because some pieces need to overlap in order to produce the inside dimensions shown.

Measurements:

- front: 22.1 + 0.2 by 32.3 + (2 × 0.2) = 22.12 by 32.34
- back (same as front): 22.12 by 32.34
- side (2 sides): 43.4 by (22.1 + 0.02) = 43.4 by 22.12 (× 2)
- bottom: 43.4 by 32.3

Note: Assume that the bottom is screwed in and therefore needs no overlap.



b) Answers will vary. Using the answer in a), 4 drawers can be made. It might be possible for someone who was very skilled to make 5 drawers. Allow a width of .45 m per drawer × 5 = 2.25. The piece of plywood is 2.4 m in length.