Your maths starting point

A short diagnostic for adults. No timer or pass mark. Show your working and mark anything you would like to discuss. Name: _____ Date: _____

1. An $80 item is reduced by 15%. How much do you save?

2. Calculate 3/4 + 1/8. Give a fraction or decimal.

3. A recipe needs 150 g of rice for 2 people. How much for 5 people?

4. Solve 3x + 7 = 22.

5. Find the mean of 4, 6, 8 and 10.

6. A bag has 3 red and 2 blue counters. What is the probability of blue?

7. Three notebooks cost $4.50 each. What is the total?

8. A 750 g pack costs $6. What is the equivalent price per kilogram?

Everyday maths

Fractions, percentages, ratios and unit prices. Try without a calculator first if comfortable, then check. Use units in your answers.

1. Write 0.375 as a fraction in simplest form.

2. Calculate 2/3 + 1/6.

3. Find 25% of $84.

4. A $120 bill increases by 10%. Find the new amount.

5. A recipe needs 240 g of flour for 4 servings. How much for 7 servings?

6. Which costs less per kilogram: $4.80 for 600 g, or $6.30 for 900 g?

7. A journey starts at 6:35 pm and takes 50 minutes. When does it finish?

8. A $68 sale price follows a 15% discount. What was the original price?

An algebra refresh

Write one step per line. Explain why you can perform the same operation on both sides of an equation.

1. Simplify 3x + 2x - 4.

2. Solve 4x - 5 = 19.

3. Solve 2(x + 3) = 18.

4. Make h the subject of A = b x h / 2, where b is not zero.

5. For y = 2x + 1, calculate y when x = -2, 0 and 3.

6. A service costs $15 plus $8 per hour. Write a formula for total cost C for h hours.

7. Using the previous formula, how many hours can you buy for $71?

8. Expand and simplify 3(2x - 1) - 2(x + 4).

Making sense of data

Use the original value as the base when calculating percentage change. Explain your method, not just the final number.

1. For 2, 3, 3, 7, 10, find the mean.

2. For the same data, find the median and mode.

3. For the same data, find the range.

4. A sample has 12 positive responses out of 40. What percentage is positive?

5. Sales rise from 80 to 100. What is the percentage increase?

6. A fair six-sided die is rolled. What is the probability of a result greater than 4?

7. A shop sold 12 items on Monday, 18 on Tuesday and 15 on Wednesday. Find the total and daily mean.

8. One class averages 70 marks across 10 students; another averages 80 across 30 students. Find the combined mean.

Worked answers: foundations

Page 1 - Starting point

1. $12 saved; 10% = $8 and 5% = $4. The sale price is $68.

2. 7/8 = 0.875; convert 3/4 to 6/8, then add 1/8.

3. 375 g; 150 / 2 = 75 g per person, then multiply by 5.

4. x = 5; subtract 7, then divide by 3.

5. 7; (4 + 6 + 8 + 10) / 4 = 28 / 4.

6. 2/5 = 0.4 = 40%; two blue out of five counters.

7. $13.50; 3 x $4.50.

8. $8/kg; $6 / 0.75 kg.

Page 2 - Everyday maths

1. 3/8; 375/1000 reduces by dividing both parts by 125.

2. 5/6; 2/3 = 4/6.

3. $21; one quarter of $84.

4. $132; 120 x 1.10.

5. 420 g; 240 / 4 x 7.

6. 900 g pack: $7/kg versus $8/kg for the 600 g pack.

7. 7:25 pm; 25 minutes to 7 pm, then another 25 minutes.

8. $80; $68 is 85% of the original, so 68 / 0.85.

Worked answers: algebra and data

Page 3 - Algebra

1. 5x - 4; combine the x terms.

2. x = 6; add 5, then divide by 4.

3. x = 6; divide by 2 to obtain x + 3 = 9.

4. h = 2A / b; multiply by 2, then divide by b.

5. y = -3, 1 and 7 respectively.

6. C = 15 + 8h.

7. 7 hours; (71 - 15) / 8 = 7.

8. 4x - 11; 6x - 3 - 2x - 8.

Page 4 - Data

1. 5; total 25 divided by 5.

2. Median = 3; mode = 3. The median is the middle value after sorting.

3. 8; maximum 10 minus minimum 2.

4. 30%; 12 / 40 x 100.

5. 25%; (100 - 80) / 80 x 100.

6. 2/6 = 1/3; the qualifying outcomes are 5 and 6.

7. 45 items total; mean 15 per day.

8. 77.5; (70 x 10 + 80 x 30) / 40. Do not simply average the two means.

Original practice material prepared for Ibrahim Volpi. For learning and discussion, not a formal qualification or assessment.