

Answer Key: Currency Conversion Graphs

Part 1: Which line shows which currency?

- Q1.** (a) Line A shows Australian dollars.
(b) A: Australian dollars; B: zloty; C: euro.
(c) 14 Australian dollars.
(d) £5.
- Q2.** (a) Steepest to least steep: Indian rupees, Mexican pesos, Norwegian kroner, Hong Kong dollars. All pass through $(0, 0)$.
(b) At £0, 0 of any currency; every line passes through $(0, 0)$.
- Q3.** (a) P: US dollars; Q: Canadian dollars; R: Swiss francs.
(b) Singapore dollars: $y = 1.7x$, between P and Q. New Zealand dollars: $y = 2.2x$, steeper than Q.
(c) Sam is wrong. Q is not New Zealand dollars; New Zealand dollars rate $2.20 > 1.80$, so its line would be steeper than Q.

Part 2: Measuring steepness with the gradient

- Q4.** Gradient = 24. Equation $y = 24x$. £1 buys 24 South African rand.
- Q5.** (a) S: Japanese yen; T: Indian rupees.
(b) S: $y = 200x$; T: $y = 375x$.
(c) 50 000 yen.
(d) £80.
- Q6.** (a) zloty: 0, 10, 25, 50; pounds: 0, 2, 5, 10.
(b) Straight line from $(0, 0)$ to $(50, 10)$.
(c) Gradient = 0.2.
(d) 1 zloty is worth £0.20, i.e. 20 pence.

Part 3: Flat fees and the y-intercept

- Q7.** $y = 1.3(x - 10) = 1.3x - 13$. Gradient 1.3; y-intercept -13 .
(a) \$117.
(b) £110.
- Q8.** (a) Airport M, High street L, Online N.
(b) L and N are parallel (same gradient 1.2); different y-intercepts from different flat fees.
(c) L: $y = 1.2x - 6$; M: $y = 1.1x$; N: $y = 1.2x - 18$.
(d) Cross at £60, €66. For amounts less than £60, airport gives more; for amounts more than £60, high street gives more.

- Q9.** (a) Rate: C\$1.80 per £1.
 (b) Flat fee: £5.
 (c) $x = 5$ gives $y = 0$; no Canadian dollars.
 (d) $y = 1.8x - 18$ (or $1.8(x - 10)$). Parallel; 9 Canadian dollars lower at every x .

Part 4: When do two bureaux give the same amount?

- Q10.** (a) £30: airport €33, high street €30; airport gives more.
 (b) £200: airport €220, high street €234; high street gives €14 more.
 (c) High street gives 0.10 euros more per extra £1. After £60, high street is ahead by $0.1(x - 60)$ euros; at £200 this is €14.
- Q11.** Airport: $y = 4.5x$. Town: $y = 5x - 15$. Cross at (30, 135).
 (a) Draw both lines; mark (30, 135).
 (b) £20: airport 90 zloty, town 85 zloty; airport gives more.
 (c) £50: airport 225 zloty, town 235 zloty; town gives more.
- Q12.** (a) Airport: $y = 1.15x$. Online: $y = 1.25x - 10$.
 (b) Same at £100, \$115.
 (c) £400: airport \$460, online \$490; online gives \$30 more. Mia should use online.
- Q13.** (a) E: $y = 190x - 380$. F: $y = 200x - 1000$.
 (b) Cross at £62, 11 400 yen.
 (c) £500: E gives 94 620 yen, F gives 99 000 yen; F gives 4 380 yen more. Kenji should use F.

Part 5: Challenges

- Q14.** (a) G: $y = 1.1x - 5.5$, y-intercept -5.5 . H: $y = 1.2x - 6$, y-intercept -6 .
 (b) Both cross the x-axis at (5, 0); £5 gives €0 at both.
 (c) Tom is right for any amount over £5. Lines meet only at (5, 0); since $1.2 > 1.1$, H gives more euros for $x > 5$.
- Q15.** Airport at £300 gives €330. Example new bureau: rate €1.20 per £1 left, flat fee £25, so $y = 1.2(x - 25) = 1.2x - 30$. At £300 it gives €330. For amounts more than £300, new bureau is better; for amounts less than £300, airport is better. Other examples: $r = 1.25, f = 36$; $r = 1.32, f = 50$.
- Q16.** (a) £100 gives €122.50.
 (b) Aisha is wrong. Commission is a percentage, so the line passes through the origin. $y = 1.25 \times 0.98x = 1.225x$; gradient 1.225.
 (c) High street: $y = 1.2x - 6$. Bureau K: $y = 1.225x$. K is above high street for all positive x ; solving gives $x = -240$, not realistic. K is better for every amount.