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Exchange Rates

Worked Solutions

Pearson Edexcel GCSE (1MA1) & International GCSE (4MA1) • Calculator allowed

Full worked solutions for the free Exchange Rates worksheet, GCSE and iGCSE Maths



Tap a section to jump straight to it

Full worked solutions for every question on the Exchange Rates worksheet, in the same order and with the same question numbers.

How to mark your work. Tick each step you got right, not just the final answer. In the exam, method marks are given for correct working even when the final answer is wrong. If you lost marks, find the *first* line where your working is different from ours. That is the thing to fix.

In Section E: **M** = method mark, **P** = process mark, **A** = accuracy mark, **B** = independent mark, **C** = communication mark.

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A**Your turn answers**

Compare each line of your working with the solution.

FOUNDATION

A1 Pounds to dollars, so multiply: $320 \times 1.27 = 406.4$ **\$406.40**

A2 Dollars to pounds, so divide: $513 \div 1.35 = 380$ **£380**

A3 $150 \div 1.28 = 117.1875$, so \$150 is about £117.19 **the USA** is cheaper (by about £2.81)

HIGHER

A4 $750 \times 0.98 = 735$ $735 \times 1.3 = 955.5$ **\$955.50**

A5 New rate = $1.3 \times 1.05 = 1.365$ $800 \times 1.365 = 1092$ and $800 \times 1.3 = 1040$ **\$52** more

A6 $700 \times 1.3 = 910$ $910 \div 1.4 = 650$ Loss = £50 $\frac{50}{700} \times 100 = 7.142\dots$ **7.14** %

A7 $1134.90 \div 1.3 = 873$ $873 \div 0.97 = 900$ **£900**

B**Fluency solutions**

One mark for each correct part. The notes in italics explain why each sequence was chosen.

FOUNDATION

B1 (a) **€92.80** (b) $92.80 \div 1.16 =$ **£80** (c) $100 \div 1.16 = 86.206\dots$ **£86.21** (d) $1 \div 1.16 = 0.862\dots$ **£0.86**

(a) and (b) undo each other: multiply one way, divide the other. In (d), €1 is worth less than £1

B2 (a) $45 \times 1.28 =$ **\$57.60** (b) $45 \times 0.78 =$ **£35.10** (c) $12.5 \times 190 =$ **¥2375** (d) $7.5 \times 5.2 =$ **£39**

Always look at which currency the rate starts from. In (b) the rate starts from \$1, so dollars to pounds is multiply.

- B3** (a) **€36** (b) **£45** (c) $£50 = €60$, so $£250 = €300$ (d) $€84 = €60 + €24 = £50 + £20 = €70$

The graph is a straight line through (0,0), so you can scale or add values that are off the graph.

- B4** (a) $€45$ is about $£39.13$ **€45** (b) $£52$ is about $£40.63$ **£40** (c) $€50$ is $£43.48$, $£55$ is $£42.97$ **\$55**

In (c) neither price is in pounds, so change both into pounds.

- B5** (a) **£6** (b) $294 \times 1.15 = €338.10$ (c) $297 \times 1.15 = €341.55$ (d) $394 \times 1.15 = €453.10$

On $£300$ the $£3$ fee is cheaper than 2% ($£6$).

- B6** (a) $40 \times 1.84 = €73.60$ (b) $73.60 \div 1.15 = £64$ (c) $1.84 \div 1.15 = 1.6$, so $£1.60$ per litre in France: **the UK**

HIGHER

- B7** (a) 1.2×1.05 : **£1 = €1.26** (b) 1.2×0.95 : **£1 = €1.14** (c) $\frac{1.33}{1.4} = 0.95$: **decrease of 5%**

(d) $£1$ was worth $1 \div 0.8 = 1.25$ euros and is now worth $1 \div 0.84 = 1.190\dots$ euros $\frac{1.190\dots}{1.25} = 0.952\dots$

decrease of 4.76%

In (d) the euro rose by 5%, but the pound fell by less than 5%

- B8** $€120$ each time. (a) **£100** (b) $120 \div 1.25 = £96$ (c) $120 \div 1.3 = 92.307\dots$ **£92.31** (d) $600 \div 1.25 = £480$

In (b) and (d) you lose 4% each time: the percentage lost does not depend on the amount.

- B9** (a) $345 \div 1.15 = £300$ (b) $300 \div 0.98 = 306.12\dots$ **£306.12**
(c) $300 + 5 = £305$ (d) $520 \div 1.3 = 400$, $400 \div 0.96 = 416.66\dots$ **£416.67**

- B10** (a) $1 \div 1.15 = 0.869\dots$ **£0.87** (b) $1.30 \div 1.15 = 1.130\dots$ **\$1.13** (c) $1.15 \div 1.30 = 0.884\dots$ **€0.88**
(d) $€230 = £200 = 260



C

Reasoning solutions

Your wording can be different. Check that your reason makes the same point.

FOUNDATION

- C1** (a) Ali multiplied, but going from euros back to pounds means dividing by 1.16
 (b) $290 \div 1.16 = \boxed{\text{£}250}$
- C2** $1 \div 1.25 = 0.8$, so \$1 = £0.80 **Yes**, they are the same rate written the other way round.
- C3** (a) £0 changes into €0, so the point (0, 0) is on the graph.
 (b) With the fee, £4 gives €0. Doubling the pounds does not double the euros, so the graph does not pass through (0, 0)
- C4** $100 \div 1.16 = 86.20\dots$ and $100 \div 1.30 = 76.92\dots$ Total = **£163.13**, which is less than £165, as required

HIGHER

- C5** Now: $500 \div 1.2 = 416.66\dots$, so £416.67 After: rate $1.2 \times 1.1 = 1.32$, $500 \div 1.32 = 378.78\dots$, so £378.79
 The cost is multiplied by $\frac{1}{1.1} = 0.909\dots$, a decrease of about **9.09%** **No.** Dividing by 1.1 is not the same as taking off 10%
- C6** (a) The €575 came from 95% of the pounds. Lucy multiplied by 1.05 instead of dividing by 0.95
 (b) $575 \div 1.15 = 500$ $500 \div 0.95 = 526.315\dots$ **£526.32**
- C7** Bureau A: each £1 gives $0.985 \times 1.18 = \text{€}1.1623$ Bureau B: each £1 gives €1.16
Bureau A gives slightly more euros.
- C8** (a) £ P gives € Ps . Changing back gives £ $\frac{Ps}{b}$. Loss = $P - \frac{Ps}{b} = P\left(1 - \frac{s}{b}\right)$ **as required**
 (b) As a fraction of P , the loss is $1 - \frac{s}{b}$. This contains no P
 (c) $1 - \frac{1.2}{b} = 0.04$ $\frac{1.2}{b} = 0.96$ $b = \boxed{1.25}$



D**Problem solving solutions**

There is often more than one correct method. Any complete, correct method scores full marks.

FOUNDATION

D1 Hotel = $4 \times 85 = \text{€}340$ $340 \div 1.14 = 298.24\dots$, so £298.25 $600 - 298.25 = \text{£}301.75$

D2 Germany: $960 + 40 = \text{€}1000$, and $1000 \div 1.16 = 862.06\dots$, about £862.07
 USA: $1150 \div 1.29 = 891.47\dots$, about £891.47 UK: £850 **the UK** is cheapest

D3 Fuel = $600 \div 100 \times 6.5 = 39$ litres $39 \times 1.84 = \text{€}71.76$ $71.76 \div 1.15 = \text{£}62.40$

D4 $280 \times 185 = \text{¥}51\,800$, so at most **51** notes (¥51 000)
 $51\,000 \div 185 = 275.67\dots$ He pays **£275.68**

HIGHER

D5 (a) 2.5% of £150 = £3.75, less than £5, so the commission is £5 $145 \times 1.16 = \text{€}168.20$
 (b) 2.5% of £200 = £5 exactly. More than £5 needs more than £200 **£201**

D6 Cost = $40 \times 85 = \$3400 = 3400 \div 1.25 = \text{£}2720$ Income = $40 \times 79 = \text{£}3160$
 Profit = £440 $\frac{440}{2720} \times 100 = 16.17\dots$ **16.2%**

D7 Now: €1140. Each month multiply by 1.02: 1 month €1162.80, 2 months €1186.06, 3 months €1209.78
 First at least €1200 after **3** months

D8 Ana gets $1.15x$ euros. Ben gets $1.3(x + 200) = 1.3x + 260$ dollars.
 $1.3x + 260 - 1.15x = 440$ $0.15x = 180$ **£1200**
 Check: Ana €1380, Ben \$1820, and $1820 - 1380 = 440$





Exam practice solutions

Marks are shown on the right of each line.

FOUNDATION

Foundation and Higher crossover

E1	(a) 350×1.16	M1
	€406	A1
	(b) $261 \div 1.16$	M1
	£225	A1

E2	(a) \$30	B1
	(b) $\text{£}40 = \$50$, so $\$450 = \text{£}40 \times 9$	M1
	£360	A1

E3	$96 \div 1.14 = 84.21\dots$	M1
	£84.21 is less than £85	M1
	France, by £0.79	A1

E4	$500 \times 0.98 = 490$	M1
	490×1.15	M1
	€563.50	A1

E5	$800 \times 1.3 = \$1040$	P1
	$1040 - 760 = \$280$	P1
	$280 \div 1.36 = 205.882\dots$	P1
	£205.88	A1

E6	$340 \div 0.85$	M1
	€400	A1

HIGHER

E7	April rate = $1.25 \times 1.04 = 1.3$	M1
	$600 \times 1.3 - 600 \times 1.25 = 780 - 750$	M1
	\$30	A1



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E8	$1164 \div 1.2 = 970$	M1
	$970 \div 0.97$	M1
	£1000	A1
E9	$500 \times 1.18 = \text{€}590$	P1
	$590 \div 1.24 = 475.806\dots$	P1
	Loss = $24.19\dots$, and $\frac{24.19\dots}{500} \times 100 = 4.838\dots$	P1
	4.8 %	A1
E10	$b - \frac{a}{1.15} = 1200 \quad b - \frac{a}{1.25} = 2000$	P1
	Subtract: $\frac{a}{1.15} - \frac{a}{1.25} = 800$	P1
	$a \left(\frac{1}{1.15} - \frac{1}{1.25} \right) = 800$, so $a \times \frac{0.1}{1.4375} = 800$	P1
	$a = 11\,500$	A1
	$b = \frac{11\,500}{1.15} + 1200 = 10\,000 + 1200$ $b = 11\,200$	A1

