



Unit 2 Revision Sheet A Number Higher

Note: Higher tier students must also revise using the foundation tier revision worksheets as this content can also be assessed on higher tier papers.

Questions

Q1.

Lisa sees a dress in a sale.

The normal price of the dress is \$45

The price of the dress is reduced by 12% in the sale.

(a) Work out the price of the dress in the sale.

(3)

Lisa's weekly pay increases from \$525 to \$546

(b) Calculate her percentage pay increase.

(3)

(Total for question = 6 marks)

Q2.

In a sale, normal prices are reduced by 35%

The normal price of a bed is \$1200

Work out the sale price of the bed.

(Total for question = 3 marks)

Q3.

Chen invests 40 000 yuan in a fixed term bond for 3 years.

The fixed term bond pays compound interest at a rate of 3.5% each year.

(a) Work out the value of Chen's investment at the end of 3 years. Give your answer to the nearest yuan.

(3)

Wang invested P yuan.

The value of his investment decreased by 6.5% each year.



At the end of the first year, the value of Wang's investment was 30 481 yuan.

(b) Work out the value of P .

(3)

(Total for question = 6 marks)

Q4.

Chao bought a boat for HK\$160 000

The value of the boat depreciates by 4% each year.

(a) Work out the value of the boat at the end of 3 years.

Give your answer correct to the nearest HK\$.

(3)

Jalina gets a salary increase of 5%

Her salary after the increase is HK\$252 000

(b) Work out Jalina's salary before the increase.

(3)

(Total for question = 6 marks)

Q5.

The people working for a company work in Team A or in Team B.

number of people in Team A : number of people in Team B = 3 : 4

4

5 of Team A work full time.

24% of Team B work full time.

Work out what fraction of the people working for the company work full time.

Give your fraction in its simplest form.

(Total for question = 3 marks)



Q6.

Chengbo sold a house for 180 000 yuan.

The amount for which he sold the house is 24% more than the amount he paid for the house.

- (a) Work out how much Chengbo paid for the house.
Give your answer correct to 3 significant figures.

(3)

Zhi bought a house on 1st January 2017
When she bought the house, its value was 120 000 yuan.

The value of the house increased by 1.8% per year.

- (b) Work out the value of Zhi's house on 1st January 2020
Give your answer correct to 3 significant figures.

(3)

(Total for question = 6 marks)

Q7.

The table gives information about the price of gold.

	1st February 2016	1st March 2016
Price of one ounce of gold (dollars)	1126.50	1236.50

- (a) Work out the percentage increase in the price of gold between 1st February 2016 and 1st March 2016
Give your answer correct to 3 significant figures.

(3)

The price of one ounce of gold on 1st February 2016 was 1126.50 dollars.
The price of gold increased by 19% from 1st February 2016 to 1st July 2016

- (b) Work out the price of one ounce of gold on 1st July 2016
Give your answer correct to the nearest dollar.

(3)

(Total for question = 6 marks)



Q8.

Victor buys 12 bottles of apple juice for a total cost of \$21
Victor sells all 12 bottles at \$2.45 each bottle.

Work out Victor's percentage profit.

(Total for question = 3 marks)

Q9.

Gopal is paid 20 000 rupees each month.
Jamuna is paid 19 200 rupees each month.

Gopal and Jamuna are both given an increase in their monthly pay.
After the increase, they are both paid the same amount each month.

Gopal was given an increase of 8%

Work out the percentage increase that Jamuna was given.

(Total for question = 4 marks)

Q10.

Pieter owns a currency conversion shop.

Last Monday, Pieter changed a total of 20 160 rand into a number of different currencies.

He changed $\frac{3}{10}$ of the 20 160 rand into euros.

He changed the rest of the rands into dollars, rupees and francs in the ratios 9 : 5 : 2

Work out how many more.

(Total for question = 4 marks)

Q11.

The perimeter of a triangle is 90 cm.

The lengths of the sides of the triangle are in the ratios 3 : 5 : 7.

Work out the length of the longest side of the triangle.

(Total for question = 5 marks)



Q12.

Jack, Kate and Lila share some money in the ratios 5 : 9 : 6
In total, Jack and Kate receive £56

Work out the amount of money Lila receives.

(Total for question = 3 marks)

Q13.

Here is a list of ingredients for making Apple and Raspberry Crumble for 6 people.

Apple and Raspberry Crumble	
Ingredients for 6 people	
120 grams	plain flour
230 grams	apples
200 grams	raspberries
160 grams	soft brown sugar
90 grams	butter

Sam wants to make Apple and Raspberry Crumble for 15 people.
She has enough plain flour, soft brown sugar and butter.
Work out the amount of apples and the amount of raspberries Sam needs.

(Total for question = 3 marks)

Q14.

Eric travels from the UK to India every year.

In 2010, the exchange rate was £1 = 67.1 rupees.

In 2012, the exchange rate was £1 = 82.5 rupees.

In 2010 Eric changed £600 into rupees.

How many pounds (£) did Eric have to change to rupees in 2012 to get the same number of rupees as he did in 2010?

(Total for question = 3 marks)

**Q15.**

The table shows some information about the five Great Lakes in North America.

Name	Surface area (m^2)	Volume of water (m^3)
Lake Erie	2.57×10^{10}	4.80×10^{11}
Lake Huron	6.01×10^{10}	3.52×10^{12}
Lake Michigan	5.80×10^{10}	4.87×10^{12}
Lake Ontario	1.91×10^{10}	1.64×10^{12}
Lake Superior	8.21×10^{10}	1.22×10^{13}

- (a) Work out the total surface area of the five Great Lakes.
Give your answer in standard form.

(2)

Loch Ness is the largest lake in Scotland.
The lake has a volume of water of $7.45 \times 10^9 \text{ m}^3$

The volume of water in Lake Superior is k times the volume of water in Loch Ness.

- (b) Work out the value of k .
Give your answer correct to 3 significant figures.

(2)

(Total for question = 4 marks)

Q16.

- (a) Write 0.000451 in standard form.

(1)

- (b) Work out $\frac{7.8 \times 10^5}{2.4 \times 10^{-4}}$

Give your answer in standard form.

(2)

(Total for question = 3 marks)



Q17.

(a) $x = 9 \times 10^{2m}$ where m is an integer.

Find, in standard form, an expression for \sqrt{x}

(2)

(b) $y = 9 \times 10^{2n}$ where n is an integer.

Find, in standard form, an expression for $y^{\frac{3}{2}}$

Give your answer as simply as possible.

(3)

(Total for Question is 5 marks)

Q18.

The table shows the diameters, in kilometres, of five planets.

Planet	Diameter (km)
Venus	1.2×10^4
Jupiter	1.4×10^5
Neptune	5.0×10^4
Mars	6.8×10^3
Saturn	1.2×10^5

(a) Which of these planets has the smallest diameter?

(1)

(b) Calculate the difference, in kilometres, between the diameter of Saturn and the diameter of Neptune.

Give your answer in standard form.

(2)

The diameter of the Moon is 3.5×10^3 km.

The diameter of the Sun is 1.4×10^6 km.

(c) Calculate the ratio of the diameter of the Moon to the diameter of the Sun.

Give your answer in the form $1 : n$

(2)

(Total for question = 5 marks)



Q19.

$y = 16 \times 10^{8k}$ where k is an integer.

Find an expression, in terms of k , for $y^{\frac{5}{4}}$.
Give your answer in standard form.

(Total for question = 3 marks)

Q20.

(a) Write 0.000076 in standard form.

(1)

The area covered by the Pacific Ocean is $1.6 \times 10^8 \text{ km}^2$
The area covered by the Arctic Ocean is $1.4 \times 10^7 \text{ km}^2$

(b) Write 1.6×10^8 as an ordinary number.

(1)

The area covered by the Pacific Ocean is k times the area covered by the Arctic Ocean.

(c) Find, correct to the nearest integer, the value of k .

(2)

(Total for question = 4 marks)

Q21.

(a) Write 2 840 000 000 in standard form.

(1)

(b) Write 2.5×10^{-4} as an ordinary number.

(1)

(Total for question = 2 marks)



Q22.

The table shows the populations of five countries.

Country	Population
China	1.4×10^9
Germany	8.2×10^7
Sweden	9.9×10^6
Fiji	9.1×10^5
Malta	4.3×10^5

- (a) Work out the difference between the population of China and the population of Germany.
Give your answer in standard form.

(2)

Given that

$$\text{population of Fiji} = \frac{1}{k} \times \text{population of Sweden}$$

- (b) Work out the value of k .
Give your answer correct to the nearest whole number.

(2)

(Total for question = 4 marks)



Mark Scheme

Q1.

Q	Working	Answer	Mark	Notes
(a)	$\frac{12}{100} \times 45 (=5.4)$ $45 - "5.4"$	39.6(0)	3	M1 or M2 for 45×0.88 oe eg $45 \times (1 - 0.12)$ (NB $45 \times (1 - 12\%)$ scores zero unless accompanied by a correct answer) M1 Dep on correct method for 12% A1
(b)	$546 - 525 (=21)$ $\frac{'21'}{525} \times 100$	4	3	M1 $546/525(=1.04)$ M1 Dep ($(1.04 - 1) \times 100$) or $546/525 \times 100 - 100$ A1
				Total 6 marks

Q2.

Question	Working	Answer	Mark	Notes
	$\frac{35}{100} \times 1200$ oe or 420 $1200 - "420"$	780	3	M1 M1 dep A1 SC M1 for 1620 [Award M2 for $1200 \times (1 - 0.35)$]
				Total 3 marks



Q3.

Q	Working	Answer	Mark	Notes	
(a)	for $0.035 \times 40\,000$ oe (= 1400) or $1.035 \times 40\,000$ oe (= 41 400)		3	M1	for finding 3.5% or 103.5% of 40 000
	$1.035 \times$ “41 400” oe (= 42 849) $1.035 \times$ “42 849” oe (= 44 348.72) OR $40\,000 \times 1.035^3$			M1	for completing method to find total amount in the account
		44 349		A1	accept 44 348 – 44 349
					SC: if no other marks gained award M1 for $0.105 \times 40\,000$ oe or 4200 or 44 200 accept $(1 + 0.035)$ as equivalent to 1.035 throughout
(b)	e.g. $30\,481 \div (1 - 0.065)$ or $30\,481 \div 0.935$		3	M2	for a complete method
				(M1)	for $30\,481 \div (100 - 6.5)$ (= 326) or $(100 - 6.5)\% = 30\,481$ or $93.5\% = 30\,481$ or e.g. $(1 - 0.065)x = 30\,481$
		32 600		A1	
				Total 6 marks	



Q4.

Question	Working	Answer	Mark	Notes	
a	$\frac{4}{100} \times 160\,000 \text{ oe}$ $ (=6400)$ $\frac{4}{100} \times (160\,000 -$ $ "6400") (= 6144)$ $\frac{4}{100} \times (160\,000 -$ $ "6400" - "6144")$ $ (= 5898.24)$ $160\,000 - "6400"$ $ - "6144" -$ $ "5898.24"$	141 558	3	M1 M1 for a complete method (condone 4 years rather than 3)	M2 for $160\,000 \times 0.96^3$ or $160\,000 \times 0.96^4$ (=135 895.44..)) If not M2 then award M1 for $160\,000 \times 0.96$ (=153 600) or $160\,000 \times 0.96^2$ (=147 456) accept $(1 - 0.04)$ in place of 0.96 throughout



				<p>A1 for 141 557.76 - 141 558</p> <p>SC If no other marks gained, award</p> <p>B1 for $160\,000 \times 0.12$ oe (=19 200)</p> <p>or $160\,000 \times 0.88$ oe (=140 800)</p> <p>or an answer of 140 800</p> <p>or an answer of in the range 179 978 – 179 978.24</p>
b	E.g. $252\,000 \div 1.05$	240 000	3	<p>M2 If not M2 then M1 for $x \times 1.05 = 252\,000$ or $252\,000 \div 105$ oe</p> <p>A1</p> <p>NB: An answer of 239 400 scores M0 M0 A0</p>



Q5.

Q	Working	Answer	Mark	Notes
	$\text{eg } \frac{4}{5} \times \frac{3}{7} (= \frac{12}{35}) \text{ oe or } 0.24 \times \frac{4}{7} (= \frac{96}{700}) \text{ oe or}$ $\text{eg } \frac{4}{5} \times 3 (= \frac{12}{5} = 2.4) \text{ and } 0.24 \times 4 (= \frac{24}{25} = 0.96) \text{ (or 3.36)}$ or $\text{eg } \frac{4}{5} \times 300 (= 240) \text{ and } 0.24 \times 400 (= 96) \text{ (or 336)}$		3	M1
	$\text{eg } \frac{12}{35} + \frac{96}{700} \left(= \frac{336}{700} \right) \text{ oe or}$ $\frac{2.4 + 0.96}{3 + 4} \left(= \frac{3.36}{7} \right) \text{ oe or}$ $\text{eg } \frac{240 + 96}{300 + 400} \left(= \frac{336}{700} \right) \text{ oe}$			M1 or 0.48 or 48% or correct unsimplified fraction eg $\frac{84}{175}$
		$\frac{12}{25}$		A1 cao
				Total 3 marks



Q6.

Q	Working	Answer	Mark	Notes
(a)	eg $100 + 24 (=124 \%)$ or $1 + 0.24 (= 1.24)$ or $\frac{180000}{124} (=1451.6\dots)$		3	M1
	eg $180\,000 \div 1.24$ $180\,000 \div 124 \times 100$ or $180\,000 \times 100 \div 124$ oe			M1 for a complete method
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i> <i>NB: this question is one where students could misread the number of zeros (eg one too many or one too few) in the question, up to M2 could be awarded if a correct method is seen with this misread</i>	145 000		A1 accept 145 000 – 145 200 (if a correct answer is seen in working and then rounded incorrectly, award full marks) (if no marks awarded, SCB1 for 223 200 or 223 000)
(b)	for $0.018 \times 120\,000$ oe or 2160 or $1.018 \times 120\,000$ oe or 122 160		3	M1 For finding 1.8% or 101.8% of the value
	$1.018 \times "122\,160"$ (= 124 358.88) oe and $1.018 \times "124\,358.88"$ (= 126 597.34) oe			M1 for completing the method
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i> <i>NB: this question is one where students could misread the number of zeros in 120 000 (eg one too many or one too few) in the question, up to M2 could be awarded if a correct method is seen with this misread</i>	127 000		A1 or 126 597 – 126 600 (if a correct answer is seen in working and then rounded incorrectly, award full marks) SC: if no other marks gained award M1 for $1.054 \times 120\,000$ oe or 126 480 or 6 480 accept $(1 + 0.018)$ as equivalent to 1.018 throughout
				Total 6 marks



Q7.

Question	Working	Answer	Mark	Notes
(a)	$1236.5 - 1126.5$ or 110 or $\frac{1236.5}{1126.5}$ or $1.09(7647\dots)$ or $\frac{1236.5}{1126.5} \times 100$ or $109(.7647\dots)$ $\frac{1236.5 - 1126.5}{1126.5}$ or $\frac{"110"}{1126.5}$ or $\left(\frac{1236.5}{1126.5} - 1\right)$ or $(1.09(764\dots) - 1)$ or $\frac{1236.5}{1126.5} \times 100 - 100$ or $0.0976(475\dots)$	9.76	3	M1 M1 for method that would result in 9.76... or 0.0976... A1 for 9.76 - 9.765 M2 if not M2 then award M1 for $\frac{19}{100} \times 1126.5$ oe or 214(.035)
(b)	1126.5×1.19 oe	1341	3	A1 for 1340 - 1342



Q8.

Q	Working	Answer	Mark	Notes
	$12 \times 2.45 (= 29.4) \text{ or } 21 \div 12 (= 1.75)$		3	M1
	$\frac{'29.4'-21}{21} \times 100 \text{ oe or}$ $\frac{2.45-'1.75'}{'1.75'} \times 100 \text{ oe or}$ $(\frac{'29.4'-21}{12}) \div '1.75' \times 100 \text{ oe or}$ $(\frac{2.45}{'1.75'} \times 100) - 100 \text{ oe}$			M1 or an answer of 140(%)
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	40		A1
				Total 3 marks

Q9.

Question	Working	Answer	Mark	Notes	
	$\frac{8}{100} \times 20000 (=1600)$		4	M1oe	Award M2 for 20000×1.08 or 21600
	$20000 + \frac{8}{100} \times 20000$ $(=21600) \text{ or}$ $(20\,000 - 19200) +$ $\frac{8}{100} \times 20000 (=2400)$			M1	
	$\frac{"21600"-19200}{19200} (\times 100) \text{ or}$ $\frac{"2400"}{19200} (\times 100)$ $\text{or } "21600" \div 19200 (\times 100)$ oe			M1	or for 1.125 or $\frac{9}{8}$ or 112.5%
		12.5		A1	oe
				Total 4 marks	



Q10.

Q	Working	Answer	Mark	Notes
	e.g. $0.7 \times 20\,160$ oe (= 14 112) or $0.3 \times 20\,160$ oe (= 6048)		4	M1
	e.g. “14 112” $\div (9 + 5 + 2)$ (= 882) or $(20\,160 - “6048”) \div (9 + 5 + 2)$ (= 882)			M1
	e.g. $9 \times “882” - 2 \times “882”$			M1
		6174		A1
				Total 4 marks

Q11.

Question Number	Working	Answer	Mark	Notes
	3+5+7 or 15		3	M 1 15 may be denominator of fraction or coefficient in an equation such as $15x = 90$
	$90 \div (3+5+7)$ or $90 \div “15”$ or 6 or $\frac{7}{15}$ oe			M 1 dep
		42		A1 Also award for 18 : 30 : 42
				Total 3 marks



Q12.

Q	Working	Answer	Mark	Notes
	$5 + 9$ or 14 seen or or $\frac{n}{14}$ oe (provided no evidence of 14 from incorrect method)		3	M1 $\text{or } \frac{5+9}{5+9+6} \times x = 56$
	$56 \div "14"$ or 4 or $\frac{6}{14} \times 56$			M1 dep or $56 \div \frac{14}{20}$ or 80
		24		A1 Also accept 20 : 36 : 24 as final answer
				Total 3 marks

Q13.

Q	Working	Answer	Mark	Notes
	$15 \div 6 (=2.5)$ or $6 \div 15 (=0.4)$ or $230 \div 6 (=38.33)$ or $200 \div 6 (=33.33)$ or $6 \div 230 (=0.026)$ or $6 \div 200 (=0.03)$ $230 \times "15/6"$ or $200 \times "15/6"$ oe	apples = 575 & raspberries = 500	3	M1 M1 dep (i.e "correct" calculation for apples OR raspberries) A1 cao both correct SC M1M1A0 if answers wrong way round with/without working
				Total 3 marks

Q14.

Ques	Working	Answer	Mark	Notes
	$600 \times 67.1 (=40260)$ or $67.1 \div 82.5 (=0.813...)$		3	M1
	$"40260" \div 82.5$ or $"0.813.." \times 600$			M1 dep
		488		A1 SC: B2 for 712
				Total 3 marks



Q15.

The correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Question	Working	Answer	Mark	Notes
(a)	$2.57 \times 10^{10} + 6.01 \times 10^{10} + 5.80 \times 10^{10} + 1.91 \times 10^{10} + 8.21 \times 10^{10}$ or $2.57 + 6.01 + 5.8 + 1.91 + 8.21$ or 245 000 000 000 oe or digits 245		2	M1 for clear intention to add all surface areas
		2.45×10^{11}		A1 cao
(b)	$(1.22 \times 10^{13}) \div (7.45 \times 10^9)$ or 1637(.58...) or digits 1637(58...)		2	M1 condone missing brackets
		1640		A1 accept 1637 – 1640 (may be in standard form)
				Total 4 marks

Q16.

Q	Working	Answer	Mark	Notes	
(a)		4.51×10^{-4}	1	B1	cao
(b)	$\frac{780000}{0.00024}$			M1	for 3250000000 oe (e.g. 325×10^7) or $3.25 \times 10^{5-4}$ oe or 3.25×10^n where n is an integer
		3.25×10^9	2	A1	
Total 3 marks					



Q17.

Question	Working	Answer	Mark	Notes
(a)		3×10^m	2	B2 B1 for $3 \times \sqrt{10^{2m}}$ or 3×10^{km} where $k \neq 1$ or $a \times 10^m$ where $a \neq 3$
(b)	$\left((9)^{\frac{3}{2}} = \right) 27$ or 2.7		3	B1
	27×10^{3n} oe			M1
		$2.7 \times 10^{3n+1}$		A1
				Total 5 marks

Q18.

Q	Working	Answer	Mark	Notes
(a)		Mars	1	B1
(b)	$1.2 \times 10^5 - 5.0 \times 10^4$ or 70000	7×10^4	2	M1 Correct values with intention to subtract A1 M1 A0 for 70000 with no working
(c)	$(1.4 \times 10^6) \div (3.5 \times 10^3)$	1:400 oe	2	M1 Correct values with intention to divide A1 M1 A0 for 400 or 400:1 with no working
				Total 5 marks

Q19.

Question	Working	Answer	Mark	Notes
	32 or 3.2 or 10^{10k}		3	M1
	32×10^{10k}			M1
	$3.2 \times 10^{10k+1}$	$3.2 \times 10^{10k+1}$		A1
				Total 3 marks



Q20.

Q	Working	Answer	Mark	Notes
(a)		7.6×10^{-5}	1	B1
(b)		160 000 000	1	B1
(c)	$\frac{1.6 \times 10^8}{1.4 \times 10^7}$ or $\frac{16}{1.4}$ or $\frac{80}{7}$ or $\frac{160000000}{14000000}$ or 11.428...		2	M1
		11		A1 cao
				Total 4 marks

Q21.

Q	Working	Answer	Mark	Notes
(a)		2.84×10^9	1	B1
(b)		0.000 25	1	B1
				Total 2 marks



Q22.

Q	Working	Answer	Mark	Notes
(a)	$1.4 \times 10^9 - 8.2 \times 10^7$ or $1.4 \times 10^9 - 0.082 \times 10^9$ or $140 \times 10^7 - 8.2 \times 10^7 (= 131.8 \times 10^7)$		2	M1 or for 1 318 000 000 oe but not in standard form eg 1318×10^6 or 1.318×10^n where $n \neq 9$
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	1.318×10^9		A1 Allow 1.3×10^9 or 1.32×10^9
(b)	$\frac{9.9 \times 10^6}{9.1 \times 10^5}$ oe		2	M1
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	11		A1 allow 10.8 – 11 (inclusive) SC: if M1 not scored, award B1 for an answer of $\frac{1}{11}$ allow 10.8 – 11 for the denominator
				Total 4 marks