

Firrhill High School
Mathematics Department

Level 5

Assessment Questions

percentages and Fractions

5. 2007 Paper 2 Q.1

Alistair buys an antique chair for £600.

It is expected to increase in value at the rate of 4.5% each year.

How much is it expected to be worth in 3 years?

KU	RE
3	

6. 2006 Paper 2 Q.3

Harry bids successfully for a painting at an auction.

An "auction tax" of 8% is added to his bid price.

He pays £324 in total.

Calculate his bid price.

3		
---	--	--

7. 2004 Paper 2 Q.4

250 milligrams of a drug are given to a patient at 12 noon.

The amount of the drug in the bloodstream decreases by 20% every hour.

How many milligrams of the drug are in the bloodstream at 3pm?

KU	RE
3	

8. 2007 Paper 2 Q.5

Mark takes some friends out for a meal.

The restaurant adds a 10% service charge to the price of the meal.

The **total** bill is £148.50.

What was the price of the meal?

KU	RE
3	

9. 2003 Paper 2 Q.1

Bacteria in a test-tube increase at the rate of 0.6% per hour.

At 12 noon, there are 5000 bacteria.

At 3pm, how many bacteria will be present?

Give your answer to **3 significant figures**.

KU	RE
4	

10. 2002 Paper 2 Q.2

A microwave oven is sold for £150.

This price includes VAT at 17.5%.

Calculate the price of the microwave oven **without** VAT.

3	

11. 2001 Paper 2 Q.3

In 1999, a house was valued at £90 000 and the contents were valued at £60 000.

The value of the house **appreciates** by 5% each year.

The value of the contents **depreciates** by 8% each year.

What will be the **total** value of the house **and** the contents in 2002?

3	

12. 2000 Paper 2 Q.1

In January 1999, it was estimated that the number of monkeys in a colony was 5000.

The number of monkeys is decreasing at the rate of 12% per year.

How many monkeys are expected to be in this colony in January 2002?

Give your answer to **the nearest 10**.

KU	RE
4	

13. 1999 Paper 2 Q.1

Paul bought a car last year.
 It has lost $12\frac{1}{2}\%$ of its value since then.
 It is now valued at £10 500.
 How much did Paul pay for his car?

KU	RE
2	

14. 1997 Q.5

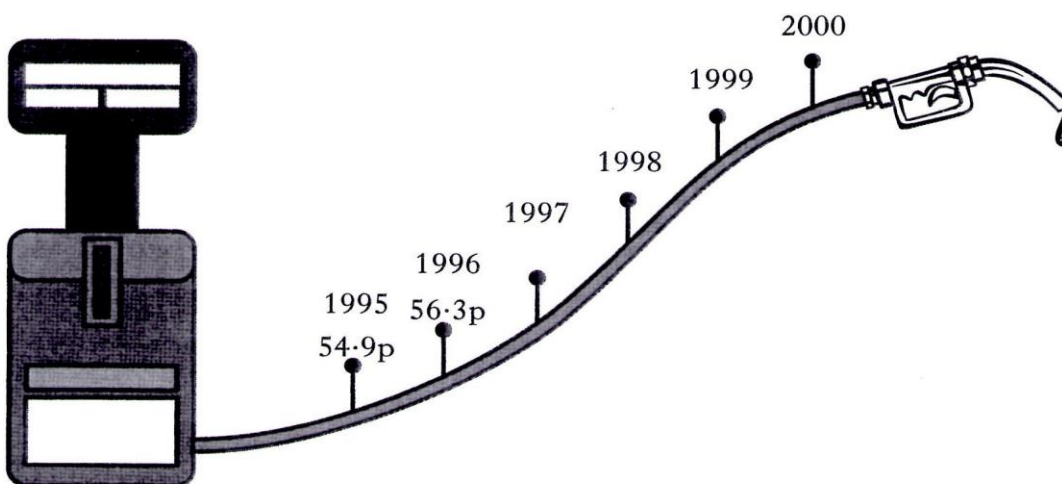
On a £500 holiday, a company offers an easy payment scheme.
 £100 is repaid on the 15th of each month.
 Interest is charged at a rate of 2.5% per month on the amount outstanding **at the end** of each month.
 The first payment is to be made in May.

Find the amount outstanding at the beginning of August.

KU	RA
3	

15. 1996 Q.12

In 1995, the price of 1 litre of a certain kind of petrol was 54.9 pence.



By 1996, the price of 1 litre of the same kind of petrol had risen to 56.3 pence.

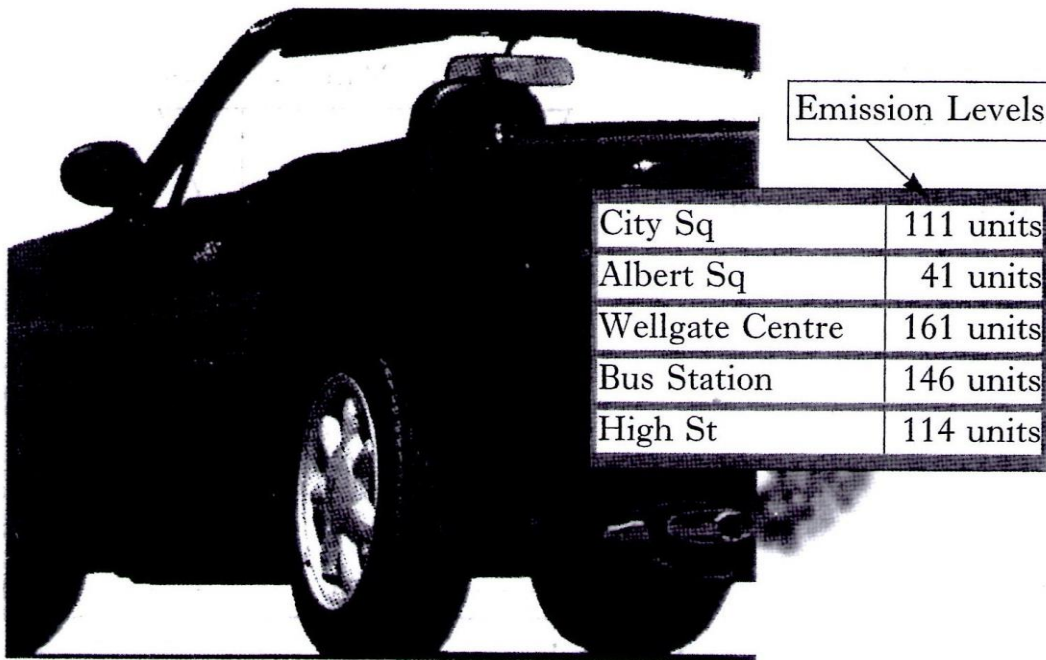
The percentage increase for each of the next four years is expected to be the same as the percentage increase between 1995 and 1996.

What is the price of 1 litre of petrol expected to be in the year 2000?

4

16. 1995 Q.8

The table shows the emission levels of harmful gases at different places in a city.



Health regulations state that the emission levels of harmful gases should be **less** than 135 units.

The city council plan to reduce the levels in such a way that for each of the next 3 years the emission levels will be 5% less than the level in the previous year.

Will all the places listed in the table meet the health regulations in 3 years time?

Show clearly all your working.

4

17. 1994 Q.2

The number of people suffering from a virus is 12 million.

For each of the next three years, the number of people suffering from the virus is expected to be 5% more than the number in the previous year.

How many people are expected to be suffering from the virus in 3 years time?

Give your answer in millions.

3

18. 1992 Paper 1 Q.3 (KU - You may use a calculator)

A van rental company purchases vans costing £16000 each.
The value of a van depreciates by 30% in the first year and then by 15% of its previous year's value in each of the following years.
A van is replaced at the end of the year in which its value falls below half its purchase price.
After how many years will the company replace a van?

Marks

4KU

19. 1990 Paper 1 Q.2 (KU - You may use a calculator)

When a ball is dropped from a height, it bounces to 70% of its starting height.
A ball is dropped from a height of 2 metres and bounces three times.
How high does it reach on its third bounce?
Answer to the nearest centimetre.

(4)

20 2015 Int 2 Paper 2

1. A house is valued at £240 000. Its value is predicted to rise by 2.8% per annum.

Calculate its predicted value after 2 years.

3

21 2015 N5 Paper 1

1. Evaluate $6\frac{1}{5} - 2\frac{1}{3}$.

2

22 2015 N5 Paper 2

1. A house is valued at £240 000.

Its value is predicted to rise by 2.8% per annum.

Calculate its predicted value after 2 years.

3

23 2015 N5 Paper 2

8. James paid £297.50 for a laptop in a sale.

The discount in the sale was 15%.

Calculate the original price of the laptop.

3

24 2014 Int 2 Paper 2

1. There are 964 pupils on the roll of Aberleven High School.

It is forecast that the roll will decrease by 15% per year.

What will be the expected roll after 3 years?

Give your answer to the nearest ten.

3

25 2014 Int 2 Paper 2

10. Gerry saves 2 pence, 5 pence and 10 pence coins in a jar.

He thinks the probability of picking a 5 pence coin at random from the jar is $\frac{25}{20}$.

Why is he wrong?

1

26 2014 N5 Paper 1

1. Evaluate $\frac{5}{12} \times 2\frac{2}{9}$.

Give the answer in simplest form.

2

27 2014 N5 Paper 1

9. 480 000 tickets were sold for a tennis tournament last year.

This represents 80% of all the available tickets.

Calculate the total number of tickets that were available for this tournament. 3

28 2014 N5 Paper 2

1. There are 964 pupils on the roll of Aberleven High School.

It is forecast that the roll will decrease by 15% per year.

What will be the expected roll after 3 years?

Give your answer to the nearest ten.

3

29 2013 Int 2 Paper 2

2. A company buys machinery worth £750 000.

The value of the machinery depreciates by 20% per annum.

The machinery will be replaced at the end of the year in which its value falls below half of its original value.

After how many years should the machinery be replaced?

You must explain your answer.

4

30 2013 Int 2 Paper 2

7. A lead **cube**, of side 10 centimetres, is melted down.
 During this process 8% of the metal is lost.
 The remaining metal is then made into a **cone**, with radius 8 centimetres.
 Calculate the height of this cone.
Give your answer correct to 2 significant figures.

5

31 2013 Credit Paper 1

2. Evaluate

$$\frac{1}{2} \div 2\frac{2}{3}$$

2

32 2013 Credit Paper 1

5. 150 patients have been given a flu vaccine.
 The data is shown in the table below.

<i>AGE</i>	<i>GENDER</i>	
	<i>male</i>	<i>female</i>
5 or under	4	3
6 – 15	7	8
16 – 59	37	47
60 or over	12	32

KU

What is the probability that

- (a) a patient given the flu vaccine was male **and** aged 60 or over?
 (b) a patient given the flu vaccine was aged 5 or under?

1

1

33 2013 Credit Paper 2

4. Last year, 1296 learner drivers from “Topflight” school of motoring passed their driving test.
 This was 72% of those who sat their driving test from Topflight.
 How many **failed** their driving test?

KU	RE
	3

34 2013 Credit Paper 2

7. Jack weighs 94 kilograms.

On the 1st of January, he starts a diet which is designed to reduce his weight by 7% per month.

During which month should he achieve his target weight of 73 kilograms?

Show all your working.

KU	RE
	4

35 2012 Int 2 Paper 2

13. Due to the threat of global warming, scientists recommended in 2010 that the emissions of greenhouse gases should be reduced by 50% by the year 2050.

The government decided to reduce the emissions of greenhouse gases by 15% every ten years, starting in the year 2010.



Mari

Will the scientists' recommendations have been achieved by 2050?

You must give a reason for your answer.

4

36 2012 Credit Paper 1

5. Mike is practising his penalty kicks.

Last week, Mike scored 18 out of 30.

This week, he scored 16 out of 25.

Has his scoring rate improved?

Give a reason for your answer.



KU	RE
	3

37 2012 Credit Paper 2

1. There are 2.69 million vehicles in Scotland.

It is estimated that this number will increase at a rate of 4% each year.

If this estimate is correct, how many vehicles will there be in 3 years' time?

Give your answer correct to 3 significant figures.

KU
4

38 2012 Credit Paper 2

6. The price for Paul's summer holiday is £894.40.

The price includes a 4% booking fee.

What is the price of his holiday without the booking fee?

3

39 2011 Int 2 Paper 2

2. It is estimated that house prices will increase at the rate of 3.15% per annum.

A house is valued at £134750. If its value increases at the predicted rate, calculate its value after 3 years.

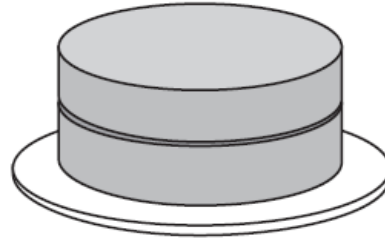
Give your answer correct to **four** significant figures.

4

40 2011 Credit Paper 1

5. Jamie is going to bake cakes for a party.

He needs $\frac{2}{5}$ of a block of butter for 1 cake.



He has 7 blocks of butter.

How many cakes can Jamie bake?

MC	ME
	3

41 2011 Credit Paper 2

1. Olga normally runs a total distance of 28 miles per week.

She decides to increase her distance by 10% a week for the next four weeks.

How many miles will she run in the fourth week?

MC
3

42 2011 Credit Paper 2

4. A car is valued at £3780.

This is 16% less than last year's value.

What was the value of the car last year?

3

43 2011 Credit Paper 2

10. Tom and Samia are paid the same hourly rate.

Harry is paid $\frac{1}{3}$ more per hour than Tom.

Tom worked 15 hours, Samia worked 8 hours and Harry worked 12 hours.

They were paid a total of £429.

How much was Tom paid?

3

Answers

1. Weight = 35400 t (3 sig figs)
2. 1.08g over the target fat content
3. Waste recycled = 52900 t (3 sig figs)
4. Original Cost = £56.25
5. Value = £684.70
6. Bid Price = £300
7. 128mg of the drug at 3pm
8. Price = £135
9. 5090 Bacteria (3 sig figs)
10. Price without VAT = £127.66 (nearest penny)
11. Total Value in 2002 = £150,907
12. 3410 monkeys (nearest 10)
13. Original Price = £12000
14. £223.19 outstanding at the beginning of August
15. Price in 2000 = 62.3p (1dp)
16. All places except Wellgate Centre will meet the health regulations - you must have evidence of how you decided this for any marks.
17. 13.8915 million
18. The van will be replaced at the end of the 4th Year.
19. Height on 3rd bounce = 69cm (nearest cm)