UNIT 11 *Fractions and Percentages* Revision Test 11.1

ONE HOUR

1. A ballpoint pen costs 5% more than a marker pen. The marker pen costs £1.60. How much does the ballpoint pen cost? (*2 marks*)

2. The passing mark for a test was 40 out of a total of 80. Ann scored 45% in this test. By how many marks did she fail the test? (*3 marks*)

3. An ice-cream seller receives as wages 18% of the takings for each day. Given that the takings for Friday, Saturday and Sunday are £175, £200 and £180 respectively, find out how much in total the ice-cream seller earns for the three days. (*4 marks*)

4. A survey on traffic travelling down a street was made. The results are shown in the table.

Type of Vehicle	*Car*	*Lorry*	*Motorcycle*	*Bicycle*
% of Total No. of Vehicles Using the Road	70%	10%	15%	5%

   (a) If there was a total of 80 vehicles, how many cars used the road?

   (b) Find the total number of motorcycles and bicycles using the road. (*6 marks*)

5. The sides of a rectangle are 30 cm and 20 cm. Each side of the rectangle is increased by 10%.

   Find

   (a) the length and breadth after the increase,

   (b) the percentage increase in area. (*5 marks*)

6. Normally, Mrs Brown works for 36 hours a week.

   For this she is paid £138.60.

   (a) Calculate her hourly rate of pay. (*2 marks*)

   (b) Extra hours worked beyond 36 count as 'overtime'.

   For overtime, Mrs Brown's hourly rate of pay is doubled.

   (i) Calculate how much she is paid for each hour of overtime that she works.

   (ii) One week she works 14 hours overtime.
   Calculate her total pay for that week. (*4 marks*)

   (c) In January 1994, Mrs Brown opened a post office savings account.

   Each month she paid £22.50 into it.

   £3.62 interest was added to the account on June 30th, and £7.29 on December 31st.

   Calculate how much she had in her account at the end of 1994. (*2 marks*)

   (d) The rate of interest given by a bank is 5%.

   Explain what 5% means. (*1 mark*)

(*MEG*)

Revision Test 11.1

7. Find, without using a calculator

(a) $\frac{1}{4}+\frac{2}{5}$ (b) $\frac{2}{5}\times\frac{15}{8}$ (c) $\frac{4}{7}\div\frac{1}{14}$

(You **must** show all your working) (*5 marks*)

8. Andy and Susie want to buy a house costing £46 000. They plan to pay a 15% deposit on this amount.

(a) (i) Calculate how much deposit they will pay.

(*2 marks*)

(ii) They will borrow the remaining amount for the house. Calculate the amount they will borrow.

(*2 marks*)

(b) The Mammoth Building Society is willing to lend them an amount equal to $2\frac{1}{2}$ times Andy's annual salary. How much must his salary be in order to afford the house?

(*2 marks*)

(c) Actually, Andy's salary is £10 250, and Susie's salary is £11 000. The Safebuild Building Society will lend them any amount up to twice the total of their two salaries.

(i) Calculate the maximum amount that Safebuild will lend them. (*3 marks*)

(ii) With a loan from Safebuild, can they afford the house? (*1 mark*)

(*SEG*)

9. Three girls found a purse while out for a walk.

They handed it back to the owner who gave them a reward of £4.50.

Sam said, "I'll have 50% of the £4.50 reward because I saw the purse first."

Kate said, "I picked the purse up so I'll have one third of the reward."

Sharon said, "I'll have the rest."

(a) How much did Sam claim? (*2 marks*)

(b) How much did Kate claim? (*2 marks*)

(c) How much was left for Sharon? (*2 marks*)

(*NEAB*)

Revision Test 11.1 Answers

1. $£1.60 \times \frac{105}{100} = £1.68$ (or equivalent) M1 A1 *(2 marks)*

2. $\frac{45}{100} \times 80 = 36$; $40 - 36 = 4$ M1 A1 A1 *(3 marks)*

3. Friday – £31.50, Saturday – £36, Sunday – £32.40 B1 B1 B1
   Total = £99.90 B1 *(4 marks)*

4. (a) $80 \times \frac{70}{100} = 56$ M1 A1
   (b) $\left(80 \times \frac{15}{100}\right) + \left(80 \times \frac{5}{100}\right) = 12 + 4 = 16$ M2 A1 A1 *(6 marks)*

5. (a) length $= 30 \times \frac{110}{100} = 33$ cm B1
   breadth $= 20 \times \frac{110}{100} = 22$ cm B1
   (b) % increase in area $= \left(\frac{33 \times 22 - 30 \times 20}{30 \times 20}\right) \times 100\%$ M2
   $= 21\%$ A1 *(5 marks)*

6. (a) $£\frac{138.60}{36} = £3.85$ M1 A1
   (b) (i) $2 \times £3.85 = £7.70$ B1
   (ii) $14 \times £7.70 = £107.80$ M1 A1
   $£138.60 + £107.80 = £246.40$ B1
   (c) $£22.50 \times 12 + £3.62 + £7.29 = £280.91$ M1 A1
   (d) Money invested gains 5% $\equiv \frac{1}{20}$ each year B1 *(9 marks)*

7. (a) $\frac{1}{4} + \frac{2}{5} = \frac{5}{20} + \frac{8}{20} = \frac{13}{20}$ M1 A1
   (b) $\frac{2}{5} \times \frac{15}{8} = \frac{3}{4}$ B1
   (c) $\frac{4}{7} \div \frac{1}{14} = \frac{4}{7} \times \frac{14}{1} = 8$ M1 A1 *(5 marks)*

Revision Test 11.1

8. (a) (i) $£46\,000 \times \frac{15}{100} = £6900$ M1 A1

(ii) $£46\,000 - £6900 = £39100$ M1 A1

(b) $£\frac{39100}{2.5} = £15\,640$ M1 A1

(c) (i) $£10\,250 + £11000 = £21250$ B1

$2 \times £21250 = £42\,500$ M1 A1

(ii) Yes B1 *(10 marks)*

9. (a) $£4.50 \times \frac{50}{100} = £2.25$ M1 A1

(b) $\frac{1}{3} \times £4.50 = £1.50$ M1 A1

(c) $£4.50 - (£2.25 + £1.50) = £0.75$ M1 A1 *(6 marks)*

(TOTAL MARKS 50)

UNIT 11 *Fractions and Percentages* Revision Test 11.2

ONE HOUR

1. A ballpoint pen costs 5% more than a marker pen. The marker pen costs £1.60. How much does the ballpoint pen cost? (*2 marks*)

2. A survey on traffic travelling down a street was made. The results are shown in the table.

Type of Vehicle	*Car*	*Lorry*	*Motorcycle*	*Bicycle*
% of Total No. of Vehicles Using the Road	70%	10%	15%	5%

(a) If there was a total of 80 vehicles, how many cars used the road?

(b) Find the total number of motorcycles and bicycles using the road. (*6 marks*)

3. The sides of a rectangle are 30 cm and 20 cm. Each side of the rectangle is increased by 10%.

Find

(a) the length and breadth after the increase,

(b) the percentage increase in area. (*5 marks*)

4. Normally, Mrs Brown works for 36 hours a week.

For this she is paid £138.60.

(a) Calculate her hourly rate of pay. (*2 marks*)

(b) Extra hours worked beyond 36 count as 'overtime'.

For overtime, Mrs Brown's hourly rate of pay is doubled.

(i) Calculate how much she is paid for each hour of overtime that she works.

(ii) One week she works 14 hours overtime.
Calculate her total pay for that week. (*4 marks*)

(c) In January 1994, Mrs Brown opened a post office savings account.

Each month she paid £22.50 into it.

£3.62 interest was added to the account on June 30th, and £7.29 on December 31st.

Calculate how much she had in her account at the end of 1994. (*2 marks)*

(d) The rate of interest given by a bank is 5%.

Explain what 5% means. (*1 mark*)

(*MEG*)

5. Find, without using a calculator

(a) $\frac{1}{4}+\frac{2}{5}$ (b) $\frac{2}{5}\times\frac{15}{8}$ (c) $\frac{4}{7}\div\frac{1}{14}$

(You **must** show all your working) (*5 marks*)

Revision Test 11.2

6. Andy and Susie want to buy a house costing £46 000. They plan to pay a 15% deposit on this amount.

   (a) (i) Calculate how much deposit they will pay. (*2 marks*)

   (ii) They will borrow the remaining amount for the house. Calculate the amount they will borrow. (*2 marks*)

   (b) The Mammoth Building Society is willing to lend them an amount equal to $2\frac{1}{2}$ times Andy's annual salary. How much must his salary be in order to afford the house? (*2 marks*)

   (c) Actually, Andy's salary is £10 250, and Susie's salary is £11 000. The Safebuild Building Society will lend them any amount up to twice the total of their two salaries.

   (i) Calculate the maximum amount that Safebuild will lend them. (*3 marks*)

   (ii) With a loan from Safebuild, can they afford the house? (*1 mark*)

   (*SEG*)

7. Three girls found a purse while out for a walk.

   They handed it back to the owner who gave them a reward of £4.50.

   Sam said, "I'll have 50% of the £4.50 reward because I saw the purse first."

   Kate said, "I picked the purse up so I'll have one third of the reward."

   Sharon said, "I'll have the rest."

   (a) How much did Sam claim? (*2 marks*)

   (b) How much did Kate claim? (*2 marks*)

   (c) How much was left for Sharon? (*2 marks*)

   (*NEAB*)

8.

NEAB CAR INSURANCE	
RENAULT	£570 per year
FORD FOXY	£360 per year

   (a) Ahmed has a Renault car.

   He is given a reduction of 45% of his car insurance because he has not had a car accident.

   This is called a 'No Claims' reduction.

   Calculate the price Ahmed has to pay to insure his car (*3 marks*)

   (b) Barbara has a Ford Foxy car.

   After taking her 'No Claims' reduction off she has to pay £234 to insure her car.

   Calculate her 'No Claims' reduction as a percentage of £360. (*2 marks*)

   (c) Christine has a Rover car.

   She is given a 60% 'No Claims' reduction.

   After taking her 'No Claims' reduction off she has to pay £82 to insure her car.

   Calculate the original price of her car insurance. (*2 marks*)

   (*NEAB*)

Revision Test 11.2 Answers

1. $£1.60 \times \frac{105}{100} = £1.68$ (or equivalent) M1 A1 *(2 marks)*

2. (a) $80 \times \frac{70}{100} = 56$ M1 A1

   (b) $\left(80 \times \frac{15}{100}\right) + \left(80 \times \frac{5}{100}\right) = 12 + 4 = 16$ M2 A1 A1 *(6 marks)*

3. (a) length $= 30 \times \frac{110}{100} = 33$ cm B1

   breadth $= 20 \times \frac{110}{100} = 22$ cm B1

   (b) % increase in area $= \left(\frac{33 \times 22 - 30 \times 20}{30 \times 20}\right) \times 100\% = 21\%$ M2 A1 (*5 marks*)

4. (a) $£\frac{138.60}{36} = £3.85$ M1 A1

   (b) (i) $2 \times £3.85 = £7.70$ B1

   (ii) $14 \times £7.70 = £107.80$ M1 A1

   $£138.60 + £107.80 = £246.40$ B1

   (c) $£22.50 \times 12 + £3.62 + £7.29 = £280.91$ M1 A1

   (d) Money invested gains 5% $\equiv \frac{1}{20}$ each year B1 *(9 marks)*

5. (a) $\frac{1}{4} + \frac{2}{5} = \frac{5}{20} + \frac{8}{20} = \frac{13}{20}$ M1 A1

   (b) $\frac{2}{5} \times \frac{15}{8} = \frac{3}{4}$ B1

   (c) $\frac{4}{7} \div \frac{1}{14} = \frac{4}{7} \times \frac{14}{1} = 8$ M1 A1 *(5 marks)*

6. (a) (i) $£46\,000 \times \frac{15}{100} = £6900$ M1 A1

   (ii) $£46\,000 - £6900 = £39100$ M1 A1

   (b) $£\frac{39100}{2.5} = £15\,640$ M1 A1

   (c) (i) $£10\,250 + £11000 = £21250$ B1

   $2 \times £21250 = £42\,500$ M1 A1

   (ii) Yes B1 *(10 marks)*

Revision Test 11.2

7. (a) $£4.50 \times \frac{50}{100} = £2.25$ M1 A1

(b) $\frac{1}{3} \times £4.50 = £1.50$ M1 A1

(c) $£4.50 - (£2.25 + £1.50) = £0.75$ M1 A1 *(6 marks)*

8. (a) $£570 \times \frac{45}{100} = £256.50$ M1 A1

cost $= £570 - £256.50 = £313.50$ B1

(b) reduction $= £360 - £234 = £126$ B1

% reduction $= \frac{126}{360} \times 100\% = 35\%$ B1

(c) $£82 \times \frac{100}{40} = £205$ M1 A1 *(7 marks)*

(TOTAL MARKS 50)

UNIT 11 *Fractions and Percentages* Revision Test 11.3

ONE HOUR

1. A survey on traffic travelling down a street was made. The results are shown in the table.

Type of Vehicle	*Car*	*Lorry*	*Motorcycle*	*Bicycle*
% of Total No. of Vehicles Using the Road	70%	10%	15%	5%

(a) If there were 56 cars, how many vehicles used the road altogether?

(b) Find the number of motorcycles and bicycles using the road. (*6 marks*)

2. The sides of a rectangle are 30 cm and 20 cm. Each side of the rectangle is increased by 10%. Find

(a) the length and breadth after the increase,

(b) the percentage increase in area. (*5 marks*)

3. Normally, Mrs Brown works for 36 hours a week.

For this she is paid £138.60.

(a) Calculate her hourly rate of pay. (*2 marks*)

(b) Extra hours worked beyond 36 count as 'overtime'.

For overtime, Mrs Brown's hourly rate of pay is doubled.

(i) Calculate how much she is paid for each hour of overtime that she works.

(ii) One week she works 14 hours overtime.
Calculate her total pay for that week. (*4 marks*)

(c) In January 1994, Mrs Brown opened a post office savings account.

Each month she paid £22.50 into it.

£3.62 interest was added to the account on June 30th, and £7.29 on December 31st.

Calculate how much she had in her account at the end of 1994. (*2 marks)*

(d) The rate of interest given by a bank is 5%.

Explain what 5% means. (*1 mark*)

(*MEG*)

4. The commission an estate agent will receive from the sale of a house is calculated as follows:

5% on the first £15 000
3% on the next £45 000
$2\frac{1}{2}$% on the next £40 000
2% thereafter

In a particular month, the agent sells a property of value £185 000.

Calulate the commission earned on the property. (*4 marks*)

Revision Test 11.3

5. Find, without using a calculator

(a) $\frac{2}{5} \times \frac{15}{8}$ (b) $\frac{4}{7} \div \frac{1}{14}$

(You **must** show all your working) (*3 marks*)

6. Andy and Susie want to buy a house costing £46 000. They plan to pay a 15% deposit on this amount.

(a) (i) Calculate how much deposit they will pay. (*2 marks*)

(ii) They will borrow the remaining amount for the house. Calculate the amount they will borrow. (*2 marks*)

(b) The Mammoth Building Society is willing to lend them an amount equal to $2\frac{1}{2}$ times Andy's annual salary. How much must his salary be in order to afford the house? (*2 marks*)

(c) Actually, Andy's salary is £10 250, and Susie's salary is £11 000. The Safebuild Building Society will lend them any amount up to twice the total of their two salaries.

(i) Calculate the maximum amount that Safebuild will lend them. (*3 marks*)

(ii) With a loan from Safebuild, can they afford the house? (*1 mark*)

(*SEG*)

7. Three girls found a purse while out for a walk.

They handed it back to the owner who gave them a reward of £4.50.

Sam said 'I'll have 50% of the £4.50 reward because I saw the purse first'.

Kate said 'I picked the purse up so I'll have one third of the reward'.

Sharon said 'I'll have the rest'.

(a) How much did Sam claim? (*2 marks*)

(b) How much did Kate claim? (*2 marks*)

(c) How much was left for Sharon? (*2 marks*)

(*NEAB*)

8.

NEAB CAR INSURANCE	
RENAULT	£570 per year
FORD FOXY	£360 per year

(a) Ahmed has a Renault car.

He is given a reduction of 45% of his car insurance because he has not had a car accident.

This is called a 'No Claims' reduction.

Calculate the price Ahmed has to pay to insure his car. (*3 marks*)

Revision Test 11.3

(b) Barbara has a Ford Foxy car.
After taking her 'No Claims' reduction off she has to pay £234 to insure her car.
Calculate her 'No Claims' reduction as a percentage of £360. (*2 marks*)

(c) Christine has a Rover car.
She is given a 60% 'No Claims' reduction.
After taking her 'No Claims' reduction off she has to pay £82 to insure her car.
Calculate the original price of her car insurance. (*2 marks*)
(*NEAB*)

Revision Test 11.3 Answers

1. (a) $56 \times \frac{100}{70} = 80$ M2 A1

   (b) $80 \times \frac{20}{100} = 16$ M1 A1 A1 *(6 marks)*

2. (a) length $= 30 \times \frac{110}{100} = 33$ cm B1

   breadth $= 20 \times \frac{110}{100} = 22$ cm B1

   (b) % increase in area $= \left(\frac{33 \times 22 - 30 \times 20}{30 \times 20}\right) \times 100\% = 21\%$ M2 A1 (*5 marks*)

3. (a) $£\frac{138.60}{36} = £3.85$ M1 A1

   (b) (i) $2 \times £3.85 = £7.70$ B1

   (ii) $14 \times £7.70 = £107.80$ M1 A1

   $£138.60 + £107.80 = £246.40$ B1

   (c) $£22.50 \times 12 + £3.62 + £7.29 = £280.91$ M1 A1

   (d) Many invested gains 5% $\equiv \frac{1}{20}$ each year B1 *(9 marks)*

4. $\frac{5}{100} \times 15\,000 + \frac{3}{100} \times 45\,000 + \frac{2.5}{100} \times 40\,000$ M1

   $+ \frac{2}{100} \times (185\,000 - 100\,000)$ M1 A1

   $= £4800$ A1 *(4 marks)*

5. (a) $\frac{2}{5} \times \frac{15}{8} = \frac{3}{4}$ B1

   (b) $\frac{4}{7} \times \frac{14}{1} = 8$ M1 A1 (*3 marks*)

6. (a) (i) $£46\,000 \times \frac{15}{100} = £6900$ M1 A1

   (ii) $£46\,000 - £6900 = £39100$ M1 A1

   (b) $£\frac{39100}{2.5} = £15\,640$ M1 A1

   (c) (i) $£10\,250 + £11\,000 = £21\,250$ B1

   $2 \times £21\,250 = £42\,500$ M1 A1

   (ii) Yes B1 *(10 marks)*

Revision Test 11.3

7. (a) $£4.50 \times \frac{50}{100} = £2.25$ M1 A1

(b) $\frac{1}{3} \times £4.50 = £1.50$ M1 A1

(c) $£4.50 - (£2.25 + £1.50) = £0.75$ M1 A1 *(6 marks)*

8. (a) $570 \times \frac{45}{100} = £256.50$ M1 A1

$\text{cost} = £570 - £256.50 = £313.50$ B1

(b) $\text{reduction} = £360 - £234 = £126$ B1

$\%\ \text{reduction} = \frac{126}{360} \times 100\% = 35\%$ B1

(c) $£82 \times \frac{100}{40} = £205$ M1 A1 *(7 marks)*

(TOTAL MARKS 50)