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**FUNCTIONAL SKILLS**

Maths Level 2



**Area: Measure, shape and space**

Criterion: Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting

**Converting pounds and pence**

There are several types of problems that you will encounter involving money. Many questions will require you to add and subtract values in both **pounds (3)** and **pence (p)**.

To convert from pounds to pence, multiply (x) by 100

For example, to convert £3.28 into pence, multiply £3.28 by 100

£3.28 x 100 = 328p

To convert from pence to pounds, divide (÷) by 100

For example, to convert 53p into pounds, divide 53p by 100

53 ÷ 100 = £0.53

When solving problems involving money, **do not** use both pounds and pence in your final answer (for example, £3.28).

**Question 1**

Convert £10.78 to pence.

(Show your working out.)

(1 mark)

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**Question 2**

Convert 18574p to pounds.

(Show your working out.)

(1 mark)

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**Question 3**

A litre of petrol costs 142p and you need 25 litres.

How much does the petrol cost?

Give your answer in **pounds (£)**.

(Show your working out.)

(2 marks)

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**Calculating amounts of money**

Money problems will often involve decimal calculations.

For example, a company charges a fixed cost of £6 for specially designed cards, plus a printing fee of 5p for each card.

1. How much will the company charge for an order of 110 cards?

Give your answer in **pounds (£)**.

As the final price is in pounds, convert pence to pounds.

5p ÷ 100 = £0.05

Each card is £0.05. To calculate the price of 110 cards, multiply the price of 1 card by 110.

£0.05 x 110 = £5.50

The company also charge a fixed cost of £6

£5.50 + £6.00 = £11.50

1. How many cards can be purchased for £20?

Give your answer in **pounds (£)**.

First, subtract the £6 fixed cost.

£20 - £6 = £14

As each card costs £0.05, calculate how many 5ps are in £14

£14.00 ÷ £0.05 = 280

£20 would buy 280 cards.

**Question 4**

A company charges a fixed cost of £5 for personalised invitations, plus a printing fee of 60p per invitation.

1. How much will the company charge for an order of 80 invitations?
2. How many invitations could you buy with £26?

Give your answers in **pounds (£)**.

(Show your working out.)

(4 marks)

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**Question 5**

A customer purchases 5kg of carrots and 250g of mushrooms.

The total cost is £3.20

1kg of mushrooms costs £3.20

Calculate the cost of **1kg of carrots**.

(Show your working out.)

(5 marks)

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**Question 6**

You receive £5.00 from your grandfather and £10.00 from your aunt for your birthday. You buy a book for £7.99 and some chocolates for £3.90

**How much money do you have left?**

(Show your working out.)

(2 marks)

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**Question 7**

You want to buy 3 new household items costing:

* £15.75
* £145.00
* £5,253.46

You have a budget of £5,500.00

Can you afford to buy all 3 items?

(Show your working out.)

(4 marks)

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**Compound interest**

Interest can be added repeatedly. For example:

* money saved in a bank account might have interest added once every year
* money owed on a credit card might be charged interest every month

Compound interest is calculated as a percentage of the current value of something, including any interest that has previously been applied.

For example, John puts £40 into a savings account that earns 5% compound interest every year.

How much money will John have after 3 years?

To solve this problem, you will need to work out the compound interest for each year until you have calculated 3 years.

1. Find 5% of £40 to calculate the interest after 1 year.

1.05 x £40 = £42

**or**

5% of £40 = £2

£40 + £2 = £42

John will have £42 after 1 year.

1. Find 5% of £42 to calculate the interest after 2 years.

1.05 x £42 = £44.10

**or**

5% of £42 = £2.10

£42 + £2.10 = £44.10

John will have £44.10 after 2 years.

1. Find 5% of £44.10 to calculate the interest after 3 years.

1.05 x £44.10 = £46.305 (£46.31 to 2 decimal places)

**or**

5% of £44.10 = £2.205 (or £2.21 to 2 decimal places)

£44.10 + £2.21 = £46.31

John will have £46.31 after 3 years.

**Question 8**

You see the following offer at the bank.

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| Open a new savings account today!   * Invest for 3 years * Receive 3% compound interest * Maximum investment of £1,500 |

You decide to invest the maximum amount of money.

**Calculate how much your investment will be worth after 3 years.**

(Show your working out.)

(4 marks)

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**Question 9**

You invest £200,000 for 5 years.

Your investment earns 1.5% compound interest per annum (each year).

At the end of 2 years, you withdraw £50,000

Calculate how much money will be left in your investment account after the withdrawal.

(Show your working out.)

(3 marks)

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**Question 10**

You take out a loan of £1,500 for 2 years.

The loan has an annual interest rate of 12.6%.

Calculate how much money you will owe at the end of 2 years.

(Show your working out.)

(2 marks)

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**Percentage increases and decreases**

Money questions may also include percentages.

You may have to calculate how much you save after receiving a discount, or the new price of an item when it has increased.

For example, a shop is having a clearance sale. All items have 44% off.

A pair of shoes usually costs £375

How much do the shoes cost during the sale?

You save 44% of £375

This can be calculated in different ways.

You can change the percentage to a decimal, then multiply it by the original price.

44% = 0.44

0.44 x £375 = £165

**or**

Find 1% of £375

£375 ÷ 100 = £3.75

Find 44% of £375

£3.75 x 44 = £165

Subtract the 44% savings from the original cost.

£375 - £165 = £210

**Calculating percentage change**

Step 1: Find the difference between the values

Step 2: Divide the difference by the original value

Step 3: Multiply the answer by 100 to find the percentage

For example, you are reading the ingredients list on a packet of cookies. The sugar content has been reduced from 50g to 42g in each packet.

Calculate the percentage reduction of sugar in each packet of cookies.

Step 1: Find the difference between the values.

50g - 42g = 8g

Step 2: Divide the difference by the original value.

8g ÷ 50 = 0.16

Step 3: Multiply the answer by 100 to find the percentage.

0.16 x 100 = 16%

**Question 11**

You are reading the ingredients list on a packet of biscuits.

The sugar content has been reduced from 42g to 27g in each packet.

Calculate the percentage reduction of sugar in each packet of biscuits.

Give your answer to 1 decimal place.

(Show your working out.)

(4 marks)

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**Question 12**

You have a diagram that is 25cm long. You have been asked to resize the diagram to measure 185mm.

Calculate what percentage you have reduced the diagram by.

(Show your working out.)

(3 marks)

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**Exam practice 1**

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Your current annualsalary is £18,000 before tax.

You have been rewarded a salary increase of 4%.

Calculate what your new salary will be after the 4% increase.

(Show your working out.)

(2 marks)

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**Taxes**

A tax is an amount of money paid to the government.

For example, the amount of council tax paid is dependent upon the value of the property that you live in. The table below is used to calculate council tax.

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| **Band** | **Council tax** |
| **A** | £1,040 |
| **B** | £1,250 |
| **C** | £1,390 |
| **D** | £1,550 |

Mark’s house falls into Band C. He lives alone, so the council reduce his council tax by 25%.

How much does Mark pay in council tax?

The council tax band for Band C is £1,390

25% of £1,390 = £347.50

Subtract this from £13,900

£1,390 – £347.50 = £1,042.50

**Question 13**

You pay 20% tax on all earnings above £12,500 in a year.

Calculate how much tax will you pay if you earn £46,000 in 1 year.

(Show your working out.)

(2 marks)

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**Question 14**

You buy a car for £5,500. This cost does **not** include the 20% VAT costs.

Calculate the total cost of the car.

(Show your working out.)

(2 marks)

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**Exam practice 2**

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VAT (value-added tax) is paid on certain items.

The table below shows the current VAT rates. This is how much you are charged on certain items as a percentage of the item’s costs.

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| **VAT** | **Items** |
| **20%** | Chocolate, crisps and cakes |
| **5%** | Gas and electricity |
| **0%** | Children’s clothes, fruit and vegetables |

You pay 32p per unit of electricity, plus a standing charge of 40p per day, **before** VAT is added.

Calculate how much you will pay in VAT if you use 3000 units of electricity   
in 1 standard calendar year.

(Show your working out.)

(5 marks)

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**Budgeting**

A budget is a record of the amount of money you have, the amount you need to spend and whether you can afford to do so.

Budgets are used to control both income and costs. For example, a business may use a budget to ensure it does not overspend.

A budget may sometimes appear as a list or table, with an amount of money set aside for each.

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| Item required | Budget |
| Travel | £250 |
| Monthly food shopping | £300 |
| Monthly utilities | £245 |
| Savings | £250 |
| Rent | £650 |
| Entertainment | £100 |
| Luxury items | £75 |

**Question 15**

You are planning a family holiday.

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| Item required | Travel | Hotel | Shopping | Food and drink |
| Costs | £616 | £546 | £484 | £750 |

You have a budget of £2,400. Can you afford the holiday?

(Show your working out.)

(3 marks)

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**Question 16**

You are planning a birthday party and have invited 150 guests.

You have hired a catering company, who are charging you £19.50 per person for the food.

Estimate the amount of money you must budget for the food.

(Show your working out.)

(2 marks)

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**Exam practice 3**

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A company has the following budget for a new project:

Eight hundred and ten thousand, five hundred and thirty pounds

The first phase of the project costs £237,219.62

How much of the budget does the company have left after the first phase?

(Show your working out.)

(2 marks)

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**Answers**

**Converting pounds and pence**

**Question 1**

£10.78 x 100 = 1078p

**Question 2**

18574p ÷ 100 = £185.74

**Question 3**

142p x 25 = 3550p

3550 ÷ 100 = £35.50

**Calculating amounts of money**

**Question 4a**

60p = £0.60

£0.60 x 80 = £48

£48 + £5.00 = £53

**Question 4b**

£26 - £5 = £21

£21 ÷ £0.60 = 35

**Question 5**

1kg = 1000g

1000 ÷ 250 = 4

£3.20 ÷ 4 = £0.80

250g of mushrooms is £0.80

Subtract this cost from the total to find the cost of 1kg of carrots.

£3.20 - £0.80 = £2.40

5kg of carrots = £2.40

Divide by 5 to find 1kg of carrots.

£2.40 ÷ 5 = £0.48

1kg of carrots costs £0.48

**Question 6**

£10.00 + £5.00 = £15.00

£7.99 + £3.90 = £11.89

£15.00- £11.89 = £3.11

**or**

£10.00 + £5.00 = £15.00

£15.00 - £7.99 = £7.01

£7.01 - £3.90 = £3.11

**Question 7**

£15.75 + £145.00 + £5,253.46 = £5,414.21

£5,500.00 - £5,414.21 = £85.79

Yes, you have enough in the budget. There will be £85.79 left over.

**or**

£5,500.00 - £15.75 - £145.00 - £5,253.46 = £85.79

Yes, you have enough in the budget. There will be £85.79 left over.

**Compound interest**

**Question 8**

Calculate the interest of each year to work out how much your investment will be worth after 3 years.

Year 1: 1.03 x £1,500 = £1,545

Year 2: 1.03 x £1,545 = £1,591.35

Year 3: 1.03 x £1,591.35 = £1,639.0905

£1,639.09 to 2 decimal places

**Question 9**

Calculate the interest of each year for 2 years.

Year 1: 1.015 x £200,000 = £203,000

Year 2: 1.015 x £203,000 = £206,045

You withdraw £50,000

£206,045 - £50,000 = £156,045

**Question 10**

Calculate the interest of each year for 2 years.

Year 1: 1.126 x £1,500 = £1,689

Year 2: 1.126 x £1,689 = £1,901.81 (to 2 decimal places)

**Percentage increases and decreases**

**Question 11**

42 – 27 = 5g

5g ÷ 42 = 0.119

0.119 x 100 = 11.9%

**Question 12**

Convert 25cm to millimetres.

25 x 10 = 250mm

Find the difference between the values: 250 – 185 = 65mm

Divide the difference by the original value: 65 ÷ 250 = 0.26

Multiply the answer by 100 to find the percentage: 0.26 x 100 = 26%

**Exam practice 1**

£18,000 x 1.04 = £18,720

**or**

Find 1% of £18,000

£18,000 ÷ 100 = £180

Find 4% of £18,000

£180 x 4 = £720

Add the 4% to the original salary.

£18,000 + £720 = £18,720

**Taxes**

**Question 13**

£46,000 - £12,500 = £33,500

Find 20% of £33,500

£33,500 x 0.2 = £6,700

**or**

Find 20% of £33,500

£33,500 ÷ 5 = £6,700

**Question 14**

1.2 x £5,500 = £6,600

**or**

Find 20% of £5,500

£5,500 ÷ 5 = £1,100

Original cost + VAT = £5,500 + £1,100 = £6,600

**Exam practice 2**

Work out the cost of 3000 units.

£0.32 x 3000 = £960

Calculate the standing charge for a year.

£0.40 x 365 = £146

Add the 2 costs together

£960 + £146 = £1106

Calculate the cost with the 5% VAT included

1.2 x £1106 = £1327.20

**or**

Find 20% of £1106

£1106 ÷ 5 = £221.20

Original cost + VAT = £1106 + £221.20 = £1327.20

**Budgeting**

**Question 15**

Calculate the total cost.

£616 + £546 + £484 + £750 = £2,396

£2,396 is less than £2,400

Yes, you can afford the holiday.

**Question 16**

Round £19.50 to £20.00

Estimate the cost of the food, based on 150 guests.

£20 x 150 = £3,000

**Exam practice 3**

Write the budget out in digits (numbers).

£810,530

Subtract the cost of the first phase.

£810,530 - £237,219.62 = £573,310.38

**Your functional skills exam**

Your functional skills exams will consist of 2 papers.   
These papers will take place over the following time periods:

* Non-calculator paper – 40 minutes
* Calculator – 1 hour 50 minutes

Further information on the format that your test will take can be obtained from your training provider.

**Hints and tips**

* Find out what format your exam will be in. It may be paper-based   
  or on-screen.
* Plan what you are going to revise in advance. Don’t leave it until the last minute.
* Do as many past papers as you can so you are prepared for the day. If possible, try to complete the past papers following the same format as the actual exam.
* Find a quiet place to study and revise. It helps to sit at a table or a desk, don’t revise in bed.
* Don’t stay up all night revising the night before your exam. It’s important to have a good rest so you feel refreshed and ready to go.
* Read the question 3 times. The first time to ensure you understand what is being asked, the second time to get an understanding of what you need to do, and a third time to figure out exactly what maths techniques you should be applying.
* If you are struggling with a question, skip it and come back to it later. Try not to sit getting worked up about a difficult question, it will only waste exam time. Move on and come back to it after you have answered the other questions.
* Take note of the number of marks available. This will give you an indication of how much working out you must show. For example, 1 mark will need an answer only and more marks will need you to show your working out.
* When you’ve finished the exam, go back and check your answers. If you still have time remaining, use it to check your answers and when you have checked your answers check them again.