

# 51 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# PERCENTAGES

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

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Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

### Information

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The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

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### Advice

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Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Wayne bought an engagement ring for Tracy.  
The total cost of the ring was £420 **plus** VAT at  $17\frac{1}{2}\%$ .



- (a) Work out the cost of the ring.

£ .....

(2)

Wayne invited 96 people to an engagement party.  
Only 60 of the people invited came to the party.

- (b) Express 60 as a percentage of 96.

..... %

(2)

**(Total 4 marks)**

2. A doctor has 12 000 patients.

4560 of these patients are male.

What percentage of these patients are **female**?

..... %

(3)

**(Total 3 marks)**

3. Martin had to buy some cleaning materials.  $\frac{1}{2}$   
The cost of the cleaning materials was £64.00 plus VAT at 17%.

Work out the total cost of the cleaning materials.

£ .....

**(Total 2 marks)**

4. There are 800 students at Prestfield School.

45% of these 800 students are girls.

- (a) Work out 45% of 800

.....

**(2)**

There are 176 students in Year 10.

- (b) Write 176 out of 800 as a percentage.

.....%

**(2)**  
**(Total 4 marks)**

5. Alistair sells books.

He sells each book for £7.60 plus VAT at  $17\frac{1}{2}\%$ .

He sells 1650 books.

Work out how much money Alistair receives.

£.....

**(Total 4 marks)**

6. A hotel has 56 guests.  
35 of the guests are male.

(a) Work out 35 out of 56 as a percentage.

..... %

**(2)**

40% of the 35 male guests wear glasses.

(b) Write the number of male guests who wear glasses as a fraction of the 56 guests.  
Give your answer in its simplest form.

.....

**(4)**

**(Total 6 marks)**

7. The cost of a compact disc holder is 25p.  
John has £15 to spend.

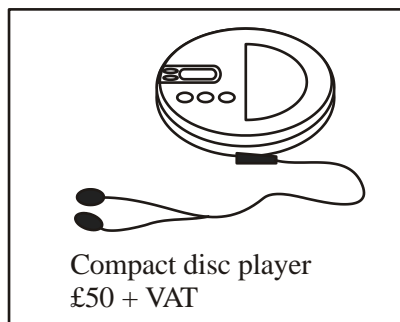
(a) What is the greatest number of compact disc holders that John can buy for £15?

.....

**(3)**

A compact disc player costs £50 plus 17½% VAT.

(b) Calculate the total cost of the compact disc player.



£ .....

**(3)**

**(Total 6 marks)**

8. Work out 28% of £85 000

£ .....

**(Total 2 marks)**

9. Work out 45% of 800

.....

**(Total 2 marks)**

10. Bytes is a shop that sells computers and digital cameras.

In 2003, Bytes sold 620 computers.

In 2004, Bytes sold 708 computers.

Work out the percentage increase in the number of computers sold.

Give your answer to an appropriate degree of accuracy.

..... %

**(4)**

11. Calculate 36% of £4500

£ .....

**(Total 2 marks)**

12. In April 2004, the population of the European Community was 376 million.

In April 2005, the population of the European Community was 451 million.

Work out the percentage increase in population.

Give your answer correct to 1 decimal place.

.....%

**(Total 3 marks)**

13. The cost of a radio is the list price plus VAT at  $17\frac{1}{2}\%$ .

The list price of a radio is £240

Work out the cost of the radio.

£ .....

**(Total 3 marks)**

14. Linda's mark in a maths test was 36 out of 50

Find 36 out of 50 as a percentage.

..... %

**(Total 2 marks)**

15. Ann buys a dress in a sale.  
The normal price of the dress is reduced by 20%.  
The normal price is £36.80

Work out the sale price of the dress.

£ .....

**(Total 3 marks)**

16. William's salary is £24 000  
His salary increases by 4%.

Work out William's new salary.

£ .....

**(Total 3 marks)**

17. The table shows the number of mobile phones sold in a shop in April and in May.

April	May
85	91

Work out the percentage increase in the number of mobile phones sold from April to May.

Give your answer correct to 3 significant figures.

..... %

**(Total 3 marks)**



# 52 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# HCF, LCM & PRODUCT OF PRIMES

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.

Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

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Use black ink or ball-point pen.

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Answer all questions.

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Calculators may be used.

### Information

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### Advice

---

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Write 140 as the product of its prime factors.

.....

**(2 marks)**

---

2. Write 720 as a product of its prime factors.

.....

**(2 marks)**

---

3. (a) Express the following numbers as products of their prime factors.

(i) 60,

.....

(ii) 96.

.....

**(4)**

(b) Find the Highest Common Factor of 60 and 96.

.....

**(1)**

(c) Work out the Lowest Common Multiple of 60 and 96.

.....

**(2)**

**(7 marks)**

---

4. (a) Express 120 as the product of powers of its prime factors.

..... (3)

(b) Find the Lowest Common Multiple of 120 and 150.

..... (2)  
**(5 marks)**

---

5. (a) Express 108 as the product of powers of its prime factors.

..... (3)

(b) Find the Highest Common Factor (HCF) of 108 and 24

..... (1)  
**(4 marks)**

---

6. (a) Work out the Highest Common Factor (HCF) of 24 and 64

.....

(2)

(b) Work out the Lowest Common Multiple (LCM) of 24 and 64

.....

(2)

**(4 marks)**

---

7. (a) Find the Highest Common Factor of 75 and 90.

.....

(2)

(b) Find the Lowest Common Multiple of 75 and 90.

.....

(2)

**(4 marks)**

---

8. (a) Express 84 as a product of its prime factors.

.....

(3)

(b) Find the Highest Common Factor (HCF) of 84 and 35

.....

(2)

**(5 marks)**

---

9. (a) Express 56 as the product of its prime factors.

.....

(2)

(b) Find the Lowest Common Multiple of 56 and 98

.....

(2)

**(4 marks)**

---

10. Find the Highest Common Factor (HCF) of 84 and 180

.....

**(3 marks)**

---

11. Find the Highest Common Factor (HCF) of 32 and 80

.....

**(3 marks)**

---

12. (a) Find the Lowest Common Multiple (LCM) of 24 and 36

.....

(2)

James thinks of two numbers.

He says "The Highest Common Factor (HCF) of my two numbers is 3  
The Lowest Common Multiple (LCM) of my two numbers is 45"

(b) Write down two numbers that James could be thinking of.

..... and .....

(3)

**(5 marks)**

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# 53 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# PLACE VALUE

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

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Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

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Calculators may be used.

### Information

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### Advice

---

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Using the information that

$$19 \times 24 = 456$$

write down the value of

(a)  $19 \times 240$

.....

(1)

(b)  $19 \times 2.4$

.....

(1)

(c)  $1.9 \times 2.4$

.....

(1)

(d)  $456 \div 190$

.....

(1)

**(4 marks)**

---

2. Given that

$$48.6 \times 35 = 1701$$

write down the value of

(a)  $4.86 \times 3.5$

.....

(1)

(b)  $486 \times 35$

.....

(1)

(c)  $4.86 \times 3.5$

.....

(1)

(d)  $17.01 \div 35$

.....

(1)

**(4 marks)**

---

3. Given that  $32 \times 14 = 448$

write down the value of

(a)  $32 \times 1.4$

..... (1)

(b)  $0.32 \times 14$

..... (1)

(c)  $0.32 \times 0.14$

..... (1)

(d)  $448 \div 320$

..... (1)

---

**(4 marks)**

4. Use the information that

$$257 \times 34 = 8738$$

to find the value of

(a)  $2.57 \times 34$

..... (1)

(b)  $25.7 \times 3.4$

..... (1)

(c)  $2.57 \times 0.34$

..... (1)

(d)  $873.8 \div 2.57$

..... (1)

---

**(4 marks)**

5. Using the information that

$$65 \times 423 = 27\,495$$

find the value of

(i)  $6.5 \times 423$

.....

(ii)  $0.65 \times 423$

.....

(iii)  $0.65 \times 4.23$

.....

(iv)  $274.95 \div 65$

.....

---

**(4 marks)**

6. Using the information that

$$73 \times 154 = 11\,242$$

write down the value of

(i)  $73 \times 1.54$

.....

(ii)  $73 \times 1.54$

.....

(iii)  $7.3 \times 1.54$

.....

(iv)  $112\,420 \div 0.73$

.....

---

**(4 marks)**

7. Use the information that

$$322 \times 48 = 15\,456$$

to find the value of

(a)  $3.22 \times 4.8$

..... (1)

(b)  $3.22 \times 0.48$

..... (1)

(c)  $0.322 \times 0.48$

..... (1)

(d)  $15\,456 \div 4.8$

..... (1)

---

(4 marks)

8. Using the information that

$$38 \times 323 = 12\,274$$

find the value of

(i)  $3.8 \times 32.3$

.....

(ii)  $0.38 \times 32.3$

.....

(iii)  $12\,274 \div 380$

.....

(iv)  $37 \times 323$

.....

---

(4 marks)

9. Using the information that

$$97 \times 123 = 11\,931$$

write down the value of

(i)  $0.97 \times 123\,000$  .....

(ii)  $11.931 \div 9.7$  .....

---

**(2 marks)**

10. Using the information that

$$4.8 \times 34 = 163.2$$

write down the value of

(a)  $48 \times 34$  .....

**(1)**

(b)  $4.8 \times 3.4$  .....

**(1)**

(c)  $163.2 \div 48$  .....

**(1)**

---

**(3 marks)**

11.  $32 \times 129 = 4128$

Write down the value of

(i)  $3.2 \times 1.29$  .....

(ii)  $32 \times 1\,290$  .....

(iii)  $0.32 \times 129\,000$  .....

---

**(3 marks)**

12. Use the information that

$$56 \times 29 = 1624$$

to find the value of

(i)  $56 \times 0.29$

.....

(ii)  $5.6 \times 0.29$

.....

(iii)  $1624 \div 0.29$

.....

**(3 marks)**

---

14. Use the information that

$$214 \times 49 = 10486$$

to find the value of

(a)  $2.14 \times 49$

.....

**(1)**

(b)  $1048.6 \div 2.14$

.....

**(1)**

**(2 marks)**

---

15. Using the information that

$$91 \times 121 = 11011$$

write down the value of

(i)  $9.1 \times 12.1$

.....

(ii)  $0.91 \times 121\,000$

.....

(iii)  $11.011 \div 9.1$

.....

**(3 marks)**

---

16. Use the information that

$$13 \times 17 = 221$$

to write down the value of

(i)  $1.3 \times 1.7$

.....

(ii)  $22.1 \div 1700$

.....

---

**(2 marks)**

17. Use the information that

$$43 \times 97 = 4171$$

to write down the value of

(i)  $4.3 \times 9.7$

.....

(ii)  $4.3 \times 0.97$

.....

(iii)  $41.71 \div 43$

.....

---

**(3 marks)**

18. Use the information that

$$84 \times 63 = 5292$$

to write down the value of

(i)  $8.4 \times 0.63$

.....

(ii)  $0.84 \times 0.63$

.....

(iii)  $52.92 \div 6.3$

.....

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**(3 marks)**



# 54 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# NEGATIVE NUMBERS

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

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Calculators may be used.

### Information

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### Advice

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Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Sally wrote down the temperature at different times on 1st January 2003.

Time	Temperature
midnight	$-6\text{ }^{\circ}\text{C}$
4 am	$-10\text{ }^{\circ}\text{C}$
8 am	$-4\text{ }^{\circ}\text{C}$
noon	$7\text{ }^{\circ}\text{C}$
3 pm	$6\text{ }^{\circ}\text{C}$
7 pm	$-2\text{ }^{\circ}\text{C}$

(a) Write down

(i) the **highest** temperature,

..... $^{\circ}\text{C}$

(ii) the **lowest** temperature.

**(2)**

(b) Work out the difference in the temperature between

(i) 4 am and 8 am,

..... $^{\circ}\text{C}$

(ii) 3 pm and 7 pm.

..... $^{\circ}\text{C}$

**(2)**

At 11 pm that day the temperature had fallen by  $5\text{ }^{\circ}\text{C}$  from its value at 7 pm.

(c) Work out the temperature at 11 pm.

..... $^{\circ}\text{C}$

**(1)**

**(5 marks)**

2. The table shows temperatures at midnight and midday on one day in five cities.

City	Midnight temperature	Midday temperature
Belfast	-3 °C	4 °C
Cambridge	-1 °C	4 °C
Edinburgh	-7 °C	-1 °C
Leeds	-6 °C	3 °C
London	-2 °C	6 °C

(a) Which city had the lowest midnight temperature?

..... (1)

(b) How many degrees higher was the midnight temperature in Cambridge than the midnight temperature in Leeds?

..... °C (1)

(c) Which city had the greatest rise in temperature from midnight to midday?

..... (1)

**(3 marks)**

---

3. At **midnight**, the temperature was  $-8^{\circ}\text{C}$ .  
By 10 00, the temperature had increased by  $6^{\circ}\text{C}$ .

(a) Work out the temperature at 10 00

..... °C (1)

By midday, the temperature was  $4^{\circ}\text{C}$ .

(b) Work out the difference between the temperature at midday and the temperature at **midnight**.

..... °C (2)

**(5 marks)**

4. The table shows the temperatures in four cities at noon one day.

Oslo	$-13^{\circ}\text{C}$
New York	$-5^{\circ}\text{C}$
Cape Town	$9^{\circ}\text{C}$
London	$2^{\circ}\text{C}$

(a) Write down the **highest** temperature.

.....  $^{\circ}\text{C}$  (1)

(b) Work out the difference in temperature between Oslo and New York.

.....  $^{\circ}\text{C}$  (1)

(c) Work out the difference in temperature between Cape Town and Oslo.

.....  $^{\circ}\text{C}$  (1)

At 8 pm the temperature in London was  $3^{\circ}\text{C}$  lower than the temperature at noon.

(d) Work out the temperature in London at 8 pm.

.....  $^{\circ}\text{C}$  (1)

---

**(4 marks)**

5. The table shows the temperatures at midnight in 6 cities during one night in 2006

City	Temperature
Berlin	5°C
London	10°C
Moscow	-3°C
New York	2°C
Oslo	-8°C
Paris	7°C

(a) Write down the city which had the lowest temperature.

.....  
(1)

(b) Work out the difference in temperature between London and Moscow.

.....°C  
(2)  
(1)

**(4 marks)**

---

6. At midnight, the temperature was -5°C.

By 9 am the next morning, the temperature had increased by 3°C.

(a) Work out the temperature at 9 am the next morning.

.....°C  
(1)

At midday, the temperature was 7°C.

(b) Work out the difference between the temperature at midday and the temperature at midnight.

.....°C  
(2)

**(3 marks)**

---

7. The table shows the midday temperatures in 4 different cities on Monday.

City	Midday temperature (°C)
Belfast	5
Cardiff	-1
Glasgow	-6
London	-4

(a) Which city had the lowest temperature? ..... (1)

(b) Work out the difference between the temperature in Cardiff and the temperature in Belfast.  
..... C (1)

By Tuesday, the midday temperature in London had risen by 7 °C.

(c) Work out the midday temperature in London on Tuesday.  
..... C (1)

---

**(3 marks)**

8.

City	Temperature
Cardiff	-2 °C
Edinburgh	-4 °C
Leeds	2 °C
London	-1 °C
Plymouth	5 °C

The table gives information about the temperatures at midnight in 5 cities.

(a) Write down the lowest temperature. .... °C (1)

(b) Work out the difference in temperature between Cardiff and Plymouth.  
..... °C (1)

(c) Work out the temperature which is halfway between -1°C and 5°C.  
..... °C (1)

---

**(3 marks)**

9. Samina recorded the maximum temperature and the minimum temperature on each of six days in January.

The table shows her results.

	Mon	Tues	Wed	Thurs	Fri	Sat
<b>Maximum temperature</b>	1 °C	3 °C	2 °C	0 °C	3 °C	4 °C
<b>Minimum temperature</b>	-4 °C	-2 °C	-4 °C	-5 °C	-3 °C	-2 °C

- (a) Write down the lowest temperature.

..... °C  
(1)

- (b) Work out the difference between the maximum temperature on Wednesday and the minimum temperature on Wednesday.

..... °C  
(1)

The minimum temperature on Sunday was 5 °C higher than the minimum temperature on Saturday.

- (c) Work out the minimum temperature on Sunday.

..... °C  
(1)

**(3 marks)**

10. The table shows the temperature on the surface of each of five planets.

Planet	Temperature
Venus	480 °C
Mars	- 60 °C
Jupiter	- 150 °C
Saturn	- 180 °C
Uranus	- 210 °C

- (a) Work out the difference in temperature between Mars and Jupiter.

..... °C  
(1)

- (b) Work out the difference in temperature between Venus and Mars.

..... °C  
(1)

- (c) Which planet has a temperature 30 °C higher than the temperature on Saturn?

.....  
(1)

The temperature on Pluto is 20 °C lower than the temperature on Uranus.

- (d) Work out the temperature on Pluto.

..... °C (1)

**(4 marks)**

11. The table shows the highest and lowest temperatures one day in London and Moscow.

	Highest	Lowest
London	8°C	-6°C
Moscow	-3°C	-8°C

(a) Work out the difference between the **lowest** temperature in London and the **lowest** temperature in Moscow.

..... °C (1)

(b) Work out the difference between the **highest** and **lowest** temperature in London.

..... °C (1)  
(2 marks)

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12. At midnight, the temperature was -5°C.

By 9 am the next morning, the temperature had increased by 3°C.

(a) Work out the temperature at 9 am the next morning.

..... °C (1)

At midday, the temperature was 7°C.

(b) Work out the difference between the temperature at midday and the temperature at midnight.

..... °C (2)

(c) Work out the temperature which is halfway between -5°C and 7°C.

..... °C (1)  
(4 marks)

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# 55 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# ESTIMATION

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

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Fill in the boxes at the top of this page with your name, centre number and candidate number.

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Calculators may be used.

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### Advice

---

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Check your answers if you have time at the end.

1. Work out an estimate for the value of

$$5.1 \times 98$$

.....

**(2 marks)**

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2. Estimate the value of

$$\frac{68 \times 401}{198}$$

.....

**(2 marks)**

---

3. Work out an estimate for the value of

$$\frac{637}{3.2 \times 9.8}$$

.....

**(2 marks)**

---

4. Which is the best estimate for the value of

$$\frac{37.9 \times 50.2}{2.1 + 2.98}$$

.....

**(3 marks)**

---

5. Which is the best estimate for the value of

$$\frac{38.3 \times 51.7}{2.1}$$

.....

**(3 marks)**

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6. Work out an estimate for

$$\frac{10.1 \times 29.7}{5.9 - 3.1}$$

.....  
**(3 marks)**

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7. Estimate the value of

$$\frac{813 \times 19.8}{97.6}$$

.....  
**(3 marks)**

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8. Work out an estimate for the value of

$$\frac{5.79 \times 312}{0.523}$$

.....

**(4 marks)**

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9. Which is the best estimate for the value of

$$\frac{410 \times 6.9}{0.23}$$

.....

**(4 marks)**

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10. Work out an estimate for

$$\frac{29.8 \times 4.1}{0.21}$$

.....

**(4 marks)**

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11. Work out an estimate for

$$\frac{302 \times 9.96}{0.51}$$

.....

**(4 marks)**

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12. Work out an estimate for

$$\frac{412 \times 5.904}{0.195}$$

.....  
**(4 marks)**

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13. Estimate the value of

$$\frac{21 \times 3.86}{0.207}$$

.....  
**(4 marks)**

---

14. Work out an estimate for the value of

$$\frac{6.8 \times 191}{0.051}$$

.....  
**(4 marks)**

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15. (a) Write down an estimate for

$$\sqrt{60}$$

.....  
**(1)**

(b) Write down an estimate for

$$\sqrt{90}$$

.....  
**(1)**

(c) Write down an estimate for

$$\sqrt{130}$$

.....  
**(1)**

(d) Write down an estimate for

$$\sqrt{150}$$

.....  
**(1)**

**(4 marks)**

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# 56 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# UTILITY BILLS

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

---

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Answer all questions.

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Calculators may be used.

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### Advice

---

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Mr Johnson works out the cost of the gas he used last year.  
At the start of the year, the gas meter reading was 8569 units.  
At the end of the year, the gas meter reading was 9872 units.

Each unit of gas he used cost 44p.

Work out the **total** cost of the gas he used last year.

£ .....

**(Total 4 marks)**

2. Mr Holland uses 367 units of electricity in one month.  
He pays 5.84p for each unit of electricity.  
Mr Holland also pays a fixed charge of £6.14 for the month.

Work out the **total amount** he pays.

£ .....

**(Total 4 marks)**

3. Here are two readings from a gas meter.

0	1	9	6	2
---	---	---	---	---

January

0	2	1	5	9
---	---	---	---	---

April

The difference in the meter readings gives the number of units of gas used.  
The cost of gas is 21p for each unit of gas used.

Work out the cost of gas used.  
Give your answer in pounds (£).

£ .....

**(Total 4 marks)**

4. Alison travels by car to her meetings.

Alison's company pays her 32p for each mile she travels.

One day Alison writes down the distance readings from her car.

Start of the day: 2430 miles

End of the day: 2658 miles

Work out how much the company pays Alison for her day's travel.

£.....

**(Total 4 marks)**

5. Peter works out the cost of the gas he used last year.  
At the start of the year, the gas meter reading was 12967 units.  
At the end of the year, the gas meter reading was 14059 units.

Each unit of gas he used cost 44p.

Work out the cost of the gas he used last year.

£ .....

**(Total 4 marks)**

\*6. Here is part of Gary's electricity bill.

<b>Electricity bill</b>	
New reading	7155 units
Old reading	7095 units
Price per unit 15p	

Work out how much Gary has to pay for the units of electricity he used.

**(Total 4 marks)**

7. Mr Shah is working out the cost of the electricity he used in April.

**Electricity Meter Readings**

1 April 79721

30 April 80305

Mr Shah has to pay

21.3p for each of the first 70 units used in April  
**and** 10.2p for each of all the other units used in April.

Work out the total cost of the electricity he used in April.

.....  
**(Total 4 marks)**



# 57 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# ALGEBRA:

# COLLECTING LIKE

# TERMS

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.

Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

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Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

### Information

---

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

### Advice

---

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Simplify

(i)  $c + c + c + c$

.....

(ii)  $p \times p \times p \times p$

.....

(iii)  $3g + 5g$

.....

(iv)  $2r \times 5p$

.....

**(4)**  
**(Total 4 marks)**

2. (a) Simplify  $5p + 2q - 3p - 3q$

.....

**(2)**

(b) Simplify

(i)  $3g + 5g$

.....

(ii)  $2r \times 5p$

.....

**(2)**  
**(Total 4 marks)**

3. (a) Simplify  $y + y$

.....

**(1)**

(b) Simplify  $p^2 + p^2 + p^2$

.....

**(1)**  
**(Total 2 marks)**

4. Simplify

(a)  $c + c + c$

..... (1)

(b)  $e + f + e + f + e$

..... (1)

(c)  $2a + 3a$

..... (1)

(d)  $2xy + 3xy - xy$

..... (1)

(e)  $3a + 5b - a + 2b + 8$

(2)  
(Total 6 marks)

5. (a) Simplify

$$2x \times y \times 3$$

..... (1)

(b) Simplify

$$5x + 3y - 2x + y$$

..... (2)

(c) Simplify

$$y \times y \times y$$

..... (1)

(Total 4 marks)

6. (a) Simplify  $5bc + 2bc - 4bc$

..... (1)

(b) Simplify  $4x + 3y - 2x + 2y$

..... (2)

(c) Simplify  $m \times m \times m$

..... (1)

(d) Simplify  $3n \times 2p$

..... (1)

**(Total 5 marks)**

7. (a) Simplify  $a + a + a + a$

..... (1)

(b) Simplify  $3 \times b \times 4$

..... (1)

(c) Simplify completely  $4a + 5b - 2a + b$

..... (2)

**(Total 4 marks)**

8. (a) Simplify  $2a + 7b - 3b + a$

..... (2)

(b) Simplify  $x^3 + x^3$

..... (1)

**(Total 3 marks)**

9. (a) Simplify  $4p \times 5q$

..... (1)

(b) Simplify  $d \times d \times d \times d$

..... (1)  
**(Total 2 marks)**

10. Simplify

(i)  $5g - 2g$

..... (1)

(ii)  $p \times p$

..... (1)  
**(Total 2 marks)**

11. (a) Simplify  $3p + 2q - p + 2q$

..... (2)

(b) Simplify  $3y^2 - y^2$

..... (1)

(c) Simplify  $5c + 7d - 2c - 3d$

..... (2)

(d) Simplify  $4p \times 2q$

..... (1)  
**(Total 6 marks)**

12. (a) Simplify  $d + d + d + d + d$

..... (1)

(b) Simplify  $y^2 + y^2$

..... (1)

(c) Simplify

(i)  $3a + 4b - 2a - b$

..... (2)

(ii)  $5x^2 + 2x - 3x^2 - x$

..... (2)  
**(Total 6 marks)**

13. (a) Simplify  $4x + 7y + 2x - 3y$

..... (2)

(b) Simplify  $2pq + pq$

..... (1)  
**(Total 3 marks)**

14. (a) Simplify

(i)  $e + f + e + f + e$

..... (1)

(ii)  $p^2 + p^2 + p^2$

..... (1)  
**(Total 2 marks)**

15. (a) Simplify

(i)  $e + f + e + f + e + f + e$

.....  
(1)

(ii)  $p^2 + p^2 + p^2$

.....  
(1)  
**(Total 2 marks)**

16. (a) Simplify  $2x + 2x$

.....  
(1)

(b) Simplify  $5y - 2y$

.....  
(1)

(c) Simplify  $2 \times 4p$

.....  
(1)

**(Total 3 marks)**

17. (a) Simplify  $c + c + c$

.....  
(1)

(b) Simplify  $2e \times 3f$

.....  
(1)

(c) Simplify  $9p + 2t - 2p + 3t$

.....  
(2)

**(Total 4 marks)**

18. (a) Simplify  $f + f + f + f - f$

.....  
(1)

(b) Simplify  $2m \times 3$

.....  
(1)

(c) Simplify  $3a + 2h + a + 3h$

.....  
(2)

**(Total 4 marks)**

19. (a) Simplify  $a + a + a + a$

.....  
(1)

(b) Simplify  $3 \times c \times d$

.....  
(1)

(c) Simplify  $3ef + 5ef - ef$

.....  
(1)

**(Total 3 marks)**

20. (a) Simplify  $d + d + d + d + d$

.....  
(1)

(b) Simplify  $3 \times m \times 2$

.....  
(1)

(c) Simplify  $6k + 3j - 2k + 5j$

.....  
(2)

**(Total 4 marks)**



# 58 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# ALGEBRA:

# EXPAND & FACTORISE

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

---

Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

### Information

---

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

### Advice

---

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. (a) Factorise  $8x - 20$

.....  
(1)

(b) Factorise fully  $10x^2 - 15xy$

.....  
(2)  
**(3 marks)**

---

2. (a) Factorise  $3x + 12$

(b) Factorise fully

$2x^2 - 4xy$

.....  
(1)

(c) Expand and simplify  $3(2a + 5) + 5(a - 2)$

.....  
(2)

.....  
(2)  
**(5 marks)**

---

3. (a) Expand  $3(2y - 5)$

.....  
(1)

(b) Factorise completely  $8x^2 + 4xy$

.....  
(2)  
**(3 marks)**

---

4. (a) Expand  $4(3x + 5)$

.....  
(1)

(b) Expand and simplify  $3(x - 4) - 2(x + 5)$

.....  
(2)  
**(3 marks)**

5. (a) Factorise  $x^2 + 7x$

.....  
(2)

(b) Expand  $x(x + 2)$

.....  
(2)

(c) Factorise completely  $2y^2 - 4y$

.....  
(2)  
**(6 marks)**

6. (a) Expand  $3(4x + y)$

(2)

(b) Expand  $5p(p - 3)$

.....  
(2)

(c) Factorise completely  $8y^2 - 24xy$

.....  
(2)

.....  
(2)  
**(6 marks)**

7. (a) Expand and simplify  $3(x + 4) + 2(5x - 1)$

.....  
(2)

(b) Factorise completely  $6y^2 - 9xy$

.....  
(2)

**(4 marks)**

---

8. (a) Factorise fully  $6y^2 + 12y$

(2)

(b) Factorise  $5x - 10$

.....

.....  
(1)

(c) Factorise fully  $2p^2 - 4pq$

.....  
(2)

**(5 marks)**

---

9. (a) Expand and simplify  $3(x + 5) + 2(5x - 6)$

.....  
(2)

(b) Factorise  $5x + 10$

.....  
(1)

(c) Factorise  $x^2 - 7x$

.....  
(1)

**(4 marks)**

---

10. (a) Expand  $x(x + 2)$   
.....  
(2)

(b) Factorise  $15x - 10$   
.....  
(2)

(c) Expand and simplify  $2(x - y) - 3(x - 2y)$   
.....  
(2)  
**(6 marks)**

---

11. (a) Factorise  $4x + 10$   
.....  
(1)

(b) Factorise fully  $6y^2 + 12y$   
.....  
(2)

(c) Factorise  $4 + 6x$   
.....  
(2)  
**(5 marks)**

---

12. (a) Expand  $3(2y - 5)$   
.....  
(1)

(b) Factorise completely  $8x^2 + 4xy$   
.....  
(2)

(c) Factorise  $4x + 10y$   
.....  
(2)  
**(5 marks)**

---

13. (a) Expand  $3(x + 4)$   
 .....  
 (1)
- (b) Expand  $x(x^2 + 2)$   
 .....  
 (2)
- (c) Factorise  $x^2 - 6x$   
 .....  
 (1)
- 
- (4 marks)**

14. (a) Factorise  $p^2 + p$   
 .....  
 (1)
- (b) Factorise  $x^2 + 7x$   
 .....  
 (1)
- (c) Expand and simplify  $4(x - 3) - 2(1 - x)$   
 .....  
 (2)
- 
- (4 marks)**

15. (a) Factorise  $4x + 10y$   
 .....  
 (1)
- (b) Factorise  $x^2 + 7x$   
 .....  
 (1)
- (c) Expand  $x^2(x + 5)$   
 .....  
 (2)
- 
- (4 marks)**

16. (a) Expand  $5(2y - 3)$   
 ..... (1)
- (b) Expand the brackets  $p(q - p^2)$   
 ..... (1)
- (c) Expand and simplify  $5(3p + 2) - 2(5p - 3)$   
 ..... (2)
- (4 marks)**
- 

17. (a) Expand  $3(2g - 1)$   
 ..... (1)
- (b) Expand  $2d(d + 3)$   
 ..... (2)
- (c) Factorise  $p^2 + 6p$   
 ..... (2)
- (5 marks)**
- 

18. (a) Multiply out  $7(n - 3)$   
 ..... (1)
- (b) Expand  $5(2y - 3)$   
 ..... (1)
- (c) Expand and simplify  
 $2(3x + 4) - 3(4x - 5)$   
 ..... (2)
- (4 marks)**
-

19. (a) Expand  $y(y^3 + 2y)$   
 ..... (2)
- (b) Factorise completely  $6x^2 - 9xy$   
 ..... (2)
- (c) Expand and simplify  $5(3p + 2) - 2(5p - 3)$   
 ..... (2)
- 
- (6 marks)**

20. Expand the brackets
- (i)  $4(2x - 3)$   
 ..... (2)
- (ii)  $p(q - p^2)$   
 ..... (2)
- (ii)  $t(3t^2 + 4)$   
 ..... (2)
- 
- (6 marks)**

21. (a) Factorise  $3t - 12$   
 ..... (2)
- (b) Factorise  $y^2 + y$   
 ..... (1)
- (c) Expand and simplify  $3(2x - 1) - 2(2x - 3)$   
 ..... (2)
- 
- (6 marks)**



# 59 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# ALGEBRA:

# SOLVING EQUATIONS

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

---

Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

### Information

---

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

### Advice

---

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. (a) Solve  $2y = 8$

$y = \dots\dots\dots$   
**(1)**

(b) Solve  $t - 4 = 7$

$t = \dots\dots\dots$   
**(1)**

(c) Solve  $\frac{x}{4} = 3$

$x = \dots\dots\dots$   
**(1)**

**(3 marks)**

---

2. (a) Solve  $\frac{y}{3} = 6$

$y = \dots\dots\dots$   
**(1)**

(b) Solve  $7y = 54$

$y = \dots\dots\dots$   
**(1)**

(c) Solve  $2t - 5 = 9$

$t = \dots\dots\dots$   
**(2)**

**(4 marks)**

---

3. (a) Solve  $4w = 20$

$w = \dots\dots\dots$   
**(1)**

(b) Solve  $x - 6 = 3$

$x = \dots\dots\dots$   
**(1)**

(c) Solve  $\frac{y}{3} = 7$

$y = \dots\dots\dots$   
**(1)**

**(3 marks)**

---

4. (a) Solve  $3x = 12$

$x = \dots\dots\dots$   
**(1)**

(b) Solve  $y - 7 = 5$

$y = \dots\dots\dots$   
**(1)**

(c) Solve  $2t + 8 = 3$

$t = \dots\dots\dots$   
**(2)**

(d) Solve  $\frac{2y}{5} = 4$

$y = \dots\dots\dots$   
**(2)**

**(3 marks)**

---

5. (a) Solve  $6g = 18$

$g = \dots\dots\dots$   
(1)

(b) Solve  $y + 5 = 12$

$y = \dots\dots\dots$   
(1)

(c) Solve  $\frac{x}{4} = 3$

$x = \dots\dots\dots$   
(1)

(d) Solve  $5h + 7 = 17$

$h = \dots\dots\dots$   
(2)

**(5 marks)**

---

6. (a) Solve  $b - 7 = 12$

$b = \dots\dots\dots$   
(1)

(b) Solve  $5e = 40$

$e = \dots\dots\dots$   
(1)

(c) Solve  $4m + 6 = 15$

$m = \dots\dots\dots$   
(2)

(d) Solve  $5w - 6 = 10$

$w = \dots\dots\dots$   
(2)

**(6 marks)**

---

7. (a) Solve  $4x + 1 = 9$

$x = \dots\dots\dots$  (2)

(b) Solve  $2x - 5 = 4$

$x = \dots\dots\dots$  (2)

(c) Solve  $2y - 1 = 12$

$y = \dots\dots\dots$  (2)  
**(6 marks)**

---

8. (a) Solve  $4x + 1 = 19$

$x = \dots\dots\dots$  (2)

(b) Solve  $4x + 3 = 19$

$x = \dots\dots\dots$  (2)

(c) Solve  $2q + 7 = 1$

$q = \dots\dots\dots$  (2)  
**(6 marks)**

---

9. (a) Solve  $x + x + x = 15$

$x = \dots\dots\dots$  (2)

(b) Solve  $6x - 7 = 38$

$x = \dots\dots\dots$  (2)

(c) Solve  $7x + 18 = 74$

$x = \dots\dots\dots$  (2)

**(6 marks)**

---

10. (a) Solve  $2y + 3 = 8$

$y = \dots\dots\dots$  (2)

(b) Solve  $5(t - 3) = 25$

$t = \dots\dots\dots$  (2)

(c) Solve  $4(5y - 2) = 48$

$y = \dots\dots\dots$  (2)

**(6 marks)**

---

11. Solve  $13x + 1 = 11x + 9$

$x = \dots\dots\dots$

**(3 marks)**

---

12. Solve  $5t - 4 = 3t + 6$

$t = \dots\dots\dots$

**(3 marks)**

---

13. Solve  $4y + 3 = 2y + 8$

**(3 marks)**

---

14. Solve  $5y + 1 = 3y + 13$

$y = \dots\dots\dots$   
**(3 marks)**

---

15. Solve  $3y + 10 = 5y + 3$

$y = \dots\dots\dots$   
**(3 marks)**

---

16. Solve  $2y + 17 = 6y + 5$

$y = \dots\dots\dots$   
**(3 marks)**

---



# 60 Edexcel GCSE

## Mathematics (Linear) – 1MA0

# CHANGING THE SUBJECT OF A FORMULA

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

---

Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

### Information

---

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

### Advice

---

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Make  $p$  the subject of the formula  $m = 3n + 2p$

$$p = \dots\dots\dots$$

**(Total 2 marks)**

2. Make  $c$  the subject of the formula  $a = 3c - 4$

$$c = \dots\dots\dots$$

**(Total 2 marks)**

3. Make  $b$  the subject of the formula  $P = 2a + 2b$

$$b = \dots\dots\dots$$

**(Total 2 marks)**

4. Make  $c$  the subject of the formula  $f = 3c - 4$

$$c = \dots\dots\dots$$

**(Total 2 marks)**

5. Make  $t$  the subject of the formula

$$u = 7t + 30$$

$$t = \dots\dots\dots$$

**(Total 2 marks)**

6. Make  $t$  the subject of the formula  $v = u + 5t$

$$t = \dots\dots\dots$$

**(Total 2 marks)**

7. Make  $y$  the subject of the formula

$$x = 3y + 2$$

$$\dots\dots\dots$$

**(Total 2 marks)**

8. Rearrange  $y = \frac{1}{2}x + 1$  to make  $x$  the subject.

.....  
**(Total 2 marks)**

9. Make  $a$  the subject of the formula  $s = \frac{a}{4} + 8u$

$a =$  .....  
**(Total 2 marks)**

10. Make  $u$  the subject of the formula

$$D = ut + kt^2$$

$$u = \dots\dots\dots$$

**(Total 2 marks)**

11. Make  $s$  the subject of the formula

$$v^2 = u^2 + 2as$$

$$s = \dots\dots\dots$$

**(Total 2 marks)**

12. Make  $t$  the subject of the formula

$$2(t - 5) = y$$

$$t = \dots\dots\dots$$

**(Total 3 marks)**

13. Make  $n$  the subject of the formula

$$m = 5n - 21$$

$$n = \dots\dots\dots$$

**(Total 2 marks)**

14. Make  $q$  the subject of the formula  $P = 2q + 10$

$$q = \dots\dots\dots$$

**(Total 2 marks)**

15. When you are  $h$  feet above sea level, you can see  $d$  miles to the horizon, where

$$d = \sqrt{\frac{3h}{2}}$$

Make  $h$  the subject of the formula

$$d = \sqrt{\frac{3h}{2}}$$

$$h = \dots\dots\dots$$

**(Total 2 marks)**