GCSE MATHEMATICS

S21-C300

Non-Calculator Assessment Resource C

Foundation Tier

Formula list

Area and volume formulae

Where r is the radius of the sphere or cone, l is the slant height of a cone and h is the perpendicular height of a cone:

Curved surface area of a cone = πrl

Surface area of a sphere = $4\pi r^2$

Volume of a sphere = $\frac{4}{3}\pi r^3$

Volume of a cone = $\frac{1}{3}\pi r^2 h$

Kinematics formulae

Where a is constant acceleration, u is initial velocity, v is final velocity, s is displacement from the position when $t = 0$ and t is time taken:

$$v = u + at$$

$$s = ut + \frac{1}{2}at^2$$

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

1. *(a)* (i) Work out $0\dot{5} \times 100$. [1]

0.5̇ → 50

(ii) Work out $45 \div 10$. [1]

45.0 → 4.5

(b) Write $0\dot{3}1$ as

(i) a fraction, [1]

31/100

(ii) a percentage. [1]

31%

(c) Circle the greatest value. [1]

$4\dot{0}7$ $4\dot{1}8$ $4\dot{6}01$ $4\dot{0}615$ $4\dot{0}09$

(d) Work out $\frac{4}{5}$ of 45. [2]

45 ÷ 5 = 9

9 × 4 = 36

2. *Cover Insurance* sells insurance for laptops.
They have two offers.

Laptop insurance **Offer 1**	Laptop insurance **Offer 2**
One payment only **£60 for one whole year**	Pay monthly **12 months for £4.50 per month**

(a) Mika wants to buy insurance for his laptop.

Show that if Mika uses Offer 2 he will save 10% of the cost of using Offer 1. [3]

Offer 1 → £60

offer 2 → £4.50 × 12 → (4.5 × 10) + (4.5 × 2)

45 + 9 = £54

10% of 60 = 6

(offer 1) 60 − 6 = 54 = offer 2

(b) During April, *Cover Insurance* sold 630 policies.

How many policies per day, on average, did they sell for this month? [2]

630 / 30 = 21

3. The table shows nutritional information about a bottle of the sports drink, *Fitade*.

Nutritional Information	per 100 ml	per bottle
Energy (kilocalories)	28	112
Carbohydrate (grams)	6·25	25
of which sugars (grams)	4	16
Salt (grams)	0·1	0·4

(a) Complete the table. [3]

Bottle is 400 ml as 100ml values are x4 in whole bottle. 100ml x4 = 400ml
Example 16 ÷ 4 = 4 per sugar
So x4 each 100ml item per whole bottle are ÷4 to get from whole to 100ml.

(b) One afternoon, Tori drinks 3 full bottles of *Fitade*.

How many millilitres of *Fitade* does Tori drink altogether, and how many grams of salt does this contain? [2]

400ml x 3 = 1200 ml total Fitade
Salt 0.4 x 3 = 1.2 grams

She drinks 1200 ml containing 1·2 grams of salt.

(c) Show that sugars are 64% of the carbohydrate in *Fitade*.
You must show all your working. [1]

Carbs = 25g of whole bottle of which 16g is sugar

1% of 25 = 0.25 16 ÷ 0.25 = 64

4. Steph is a baker.

(a) She bakes 42 white rolls and 60 brown rolls.

Write the ratio of white rolls to brown rolls in its simplest form. [2]

W : B HCF = 6

÷6 (42 : 60) ÷6

7 : 10

white rolls : brown rolls = 7 : 10

(b) Steph makes scones in three flavours: cheese, fruit and plain. She makes:

- 4 times as many fruit scones as cheese scones,
- 3 times as many plain scones as cheese scones.

She sells each scone for the same price.
She makes a total of £96 from the sale of all the scones.

How much does she make from the sale of the plain scones? [3]

Cheese = x fruit = 4x plain = 3x

x + 4x + 3x = 8x total scones = £96

£96 = 8x → x = £12.00

plain = 3x → 3(£12) = £36

(c) Steph makes and sells birthday cakes. Each cake costs £54 to make.
She makes a profit of 15% on each cake.

What is the selling price of Steph's birthday cakes? [2]

10% of 54 = 5.4 5% of 54 = 2.7

15% of 54 = 5.4 + 2.7 = £8.1

54 + 8.1 = Selling price = £62.10

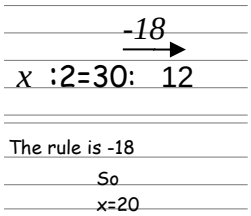
Selling price = £ 62.10

5. Terry is doing his homework.

(a) He is trying to find the value of x when

$$x : 2 = 30 : 12$$

He writes:



Explain why Terry is wrong. [1]

Rule is actually (left values) x6 = (Right values)

So x : 2 = 30 : 12 So x = 5

x6 x6

(b) Terry's next question is:

> A factory production line makes 275 thousand cans of drink in 5 hours. How many hours would it take for this production line to make 165 thousand cans of the same drink?
> You may assume each can is the same size.

Terry thinks the answer is 3 hours.

Is Terry correct?

Yes ☑ No ☐

Show how you decide. [2]

275 ÷ 5 = 55 per hour

55 x 3 = 165

So he is correct

6. Huw is paid a weekly wage. Every week he:

- Saves 1/5 of his wage,
- spends 70% of the money **he has left** on his living expenses,
- spends all that remains on his social life.

(a) One week, Huw saves £40.

How much does Huw spend on his social life? [3]

£40 = 1/5 5/5 = £40 × 5 = £200 earnings

70% of 200 = 0.7 × 200 = £140 on expenses

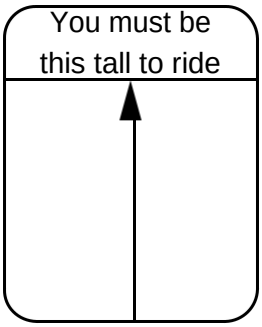
200 − (140 + 40) = £20 social life

(b) What percentage of his weekly wage does Huw spend on his social life? [2]

10% because 20 is 10% of 200

7. When Jenna was measured recently she was 127 cm tall, **correct to the nearest centimetre**.

For safety reasons, the minimum height for a person to ride the Big Coaster at a funfair in the USA is 50 inches.



You are given:
20 inches = 50˙8 cm.

(a) Using the information given, decide whether it might possibly be safe, it is definitely safe, or it is definitely not safe for Jenna to ride the Big Coaster.

Might possibly be safe ☑ Definitely safe ☐ Definitely not safe ☐

Show how you decide. [3]

Inch : cm
20 : 50.8
10 : 25.4
50 : 127

correct to nearest cm
126.5 < h < 127.5

She needs to be minimum 127 cm.

(b) (i) State an assumption that you have made in your answer to part *(a)*. [1]

Jenna is within 126.5 < h < 127.5

(ii) Comment on the effect that your assumption has had on your decision. [1]

So cant be definetly sure either way if She can ride the coaster or not.