



Mathematics

Level 1

Challenge: Football Crazy

Solutions

Task 1

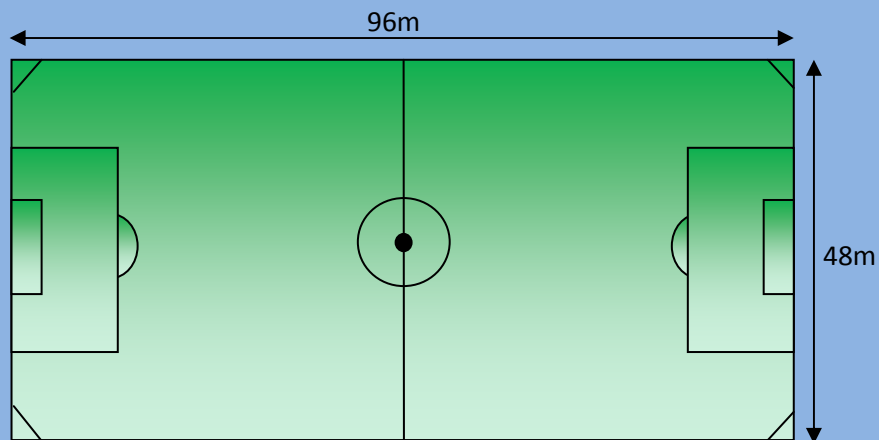
The home ground is in urgent need of repair before the new season begins. Your first job as club secretary is to find out what needs to be done, and then order the appropriate materials.

You identify that the pitch needs reurfing and the fence surrounding the pitch needs replacing. Before you can place an order, you need to work out how much turf and fencing you require. To do this, you must calculate the area and perimeter of the pitch.

Look at the diagram below and make the required calculations. Write your answers in the boxes provided. Don't forget to include the unit of measurement in your answers.

Show your working out in the 'Your notes' area.

What difference would it make to the amount of turf and fencing needed if you leave a 2m border around the edge of the pitch?



The amount of turf needed is:

4608 m²

With a 2m border, the amount of turf needed is:

5200 m²

The length of fencing needed is:

288 m

With a 2m border, the length of fencing needed is:

304 m



www.guroo.co.uk

Mathematics

Level 1

Challenge: Football Crazy

Solutions

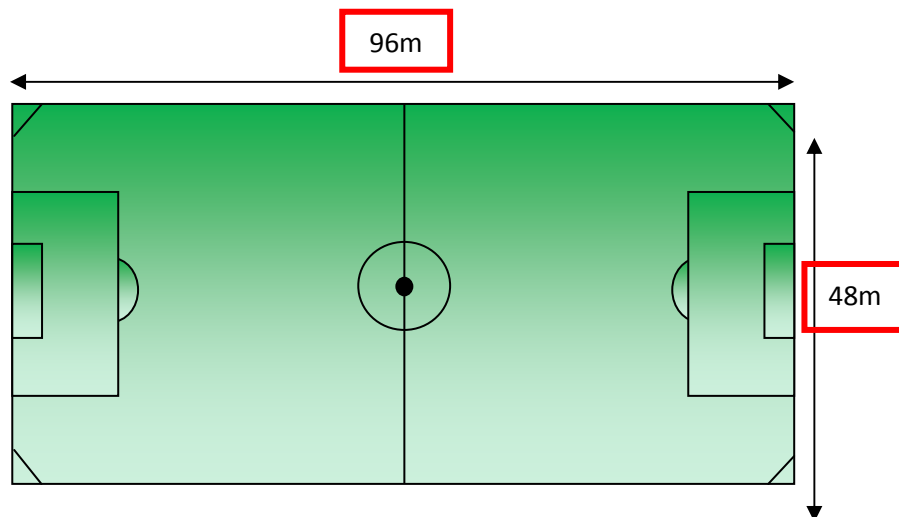
Feedback

Area

Area is the expanse of surface and is measured in square units; the choice of unit depends on the size of object. For example, something large, like a garden or a football pitch, is usually measured in metres or kilometres. Something smaller, like a tabletop or a fishtank, would usually be measured in centimetres or millimetres.

When you are working out rectangular areas, you need to multiply the length and width together.

In this example, the length is 96m and the width is 48m, so $96 \times 48 = 4608\text{m}^2$.



Perimeter

The perimeter of a shape is the distance around its edge. It can be calculated using metric or imperial measurements; for example, metres, centimetres, feet, yards etc.

To work out the perimeter of the football pitch, add all lengths and widths together:

$$96 + 48 + 96 + 48 = 288\text{m}.$$

Adding a border

Adding a 2m border around the pitch will mean the length is now 100m and the width is now 52m.

This means the area of the turf will be $100\text{m} \times 52\text{m} = 5200\text{m}^2$

The perimeter becomes $100\text{m} + 100\text{m} + 52\text{m} + 52\text{m} = 304\text{m}$



www.guroo.co.uk

Mathematics

Level 1

Challenge: Football Crazy

Solutions

Task 2

So, you've worked out how much material you require, now you need to calculate the total cost. You find out that turf costs £1.80 per square metre and fencing costs £18.50 per metre. Coopers, the company you are going to buy the material from, also gives a discount of 5% for orders over £10,000.

Complete the order form below by writing the missing amounts into the blank boxes. Show your working out in the 'Your notes' area.

Coopers

Quality assurance
guaranteed

Order Form

1 →

2 →

Description	Price/unit	Qty	Total
Turf	£1.80/sq m	4608	£8,294.40
Fencing	£18.50/m	288	£5,328.00
Sub Total			£13,622.40
Discount 5%			£681.12
Net Cost			£12,941.28
VAT 17.5%			£2,264.72
Total incl VAT			£15,206.00

← 3

← 4

← 5



www.guroo.co.uk

Mathematics

Level 1

Challenge: Football Crazy

Solutions

Feedback

To work out the total cost of materials, you firstly need to break the calculation down into smaller parts.

- 1** → Let's start with the cost of the turf. We know that 1 square metre costs £1.80 so to find out the cost of 4608m² you need to multiply 1.80 by 4608:

$$1.80 \times 4608 = \mathbf{\pounds 8,294.40}$$

- 2** → Now let's work out the cost of the fencing. We know that 1 panel measures 1m and costs £18.50, so to find out the cost of 288m you need to multiply 18.50 by 288:

$$18.50 \times 288 = \mathbf{\pounds 5,328.00}$$

- 3** → You now need to add both these amounts together to get a sub total:

$$8294.40 + 5328.00 = \mathbf{\pounds 13,622.40}$$

- 4** → Because you have more than £10,000 worth of goods, you can claim a 5% discount:

$$5\% \times 13622.40 = 681.12$$

$$\text{The net cost is } 13622.40 - 681.12 = \mathbf{\pounds 12,941.28}$$

- 5** → The last calculation on an order for is to add VAT. The VAT rate does change and in the case the rate is 17.5% which should be added to the net total.

$$\text{The total cost is } \pounds 12941.28 \times 1.175 = \mathbf{\pounds 15,206.00}$$



Mathematics

Level 1

Challenge: Football Crazy

Solutions

Task 3

Your final task is to organise the cup draws for the coming season. This is done by placing the names of all the teams in to a container then drawing them out one by one.

What is the probability that Burton Albion will be the first team drawn? Circle the answer you think is correct.

Show your working out in the 'Your notes' area.

Barrow	Mansfield Town
Burton Albion	Northwick Victoria
Crawley Town	Oxford United
Eastbourne Borough	Rushden & Diamonds
Ebbsfleet United	Salisbury City
Forest Green Rovers	Stevenage Borough
Grays Athletic	Torquay United
Histon	Weymouth
Kettering Town	Woking
Kidderminster Harriers	Wrexham

Burton Albion v ?

2% **5%** 10% 50%

? v Wrexham

2% 5% 10% **50%**



www.guroo.co.uk

Mathematics

Level 1

Challenge: Football Crazy

Solutions

Feedback

Probability is about working out how likely something is to happen. It can be expressed as a fraction, a decimal or a percentage.

The most common way of showing probability is as a fraction:

$$\text{Probability} = \frac{\text{Number of successful outcomes}}{\text{Total possible outcomes}}$$

In the first example, the number of successful outcomes is 1 (Burton Albion being drawn) and the total possible outcomes is 20 (the total number of teams). As a fraction this is $1/20$.

To change a fraction to a percentage you can use the following sum:

$$\begin{aligned} 1/20 \times 100 &= (1 \div 20) \times 100 \\ &= (0.05) \times 100 \\ &= 5 \end{aligned}$$

So, $1/20 = 5\%$.

In the second example, the number of successful outcomes is 1 (Wrexham being drawn away) and the total possible outcomes is 2 (home or away). As a fraction this is $1/2$.

To change a fraction to a percentage you can use the following sum:

$$\begin{aligned} 1/2 \times 100 &= (1 \div 2) \times 100 \\ &= (0.5) \times 100 \\ &= 50 \end{aligned}$$

So, $1/2 = 50\%$.