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| Surname | | Other names | |
| <input type="text"/> | | <input type="text"/> | |
| Essential Skills Wales | Centre Number | Candidate Number | |
| | <input type="text"/> | <input type="text"/> | |
| <h1>Essential Application of Number Skills</h1> | | | |
| <h2>Sample Set - Level 3 Confirmatory Test</h2> | | | |
| 2016-2017 | | | |
| Time: 60 minutes | | | |
| <p>You must have: Multiple choice answer sheet Black pen</p> | | | |
| <p>Instructions</p> <ul style="list-style-type: none"> • Use black ink or ball-point pen. • Answer all questions. • Encircle your answers on the separate answer sheet. • Mark only one answer for each question. <p>Information</p> <ul style="list-style-type: none"> • The total mark for this paper is 30. • Each question is worth 1 mark. <p>Advice</p> <ul style="list-style-type: none"> • Read each question carefully before you start to answer it. • Try to answer every question. • Check your answers if you have time at the end. | | | |

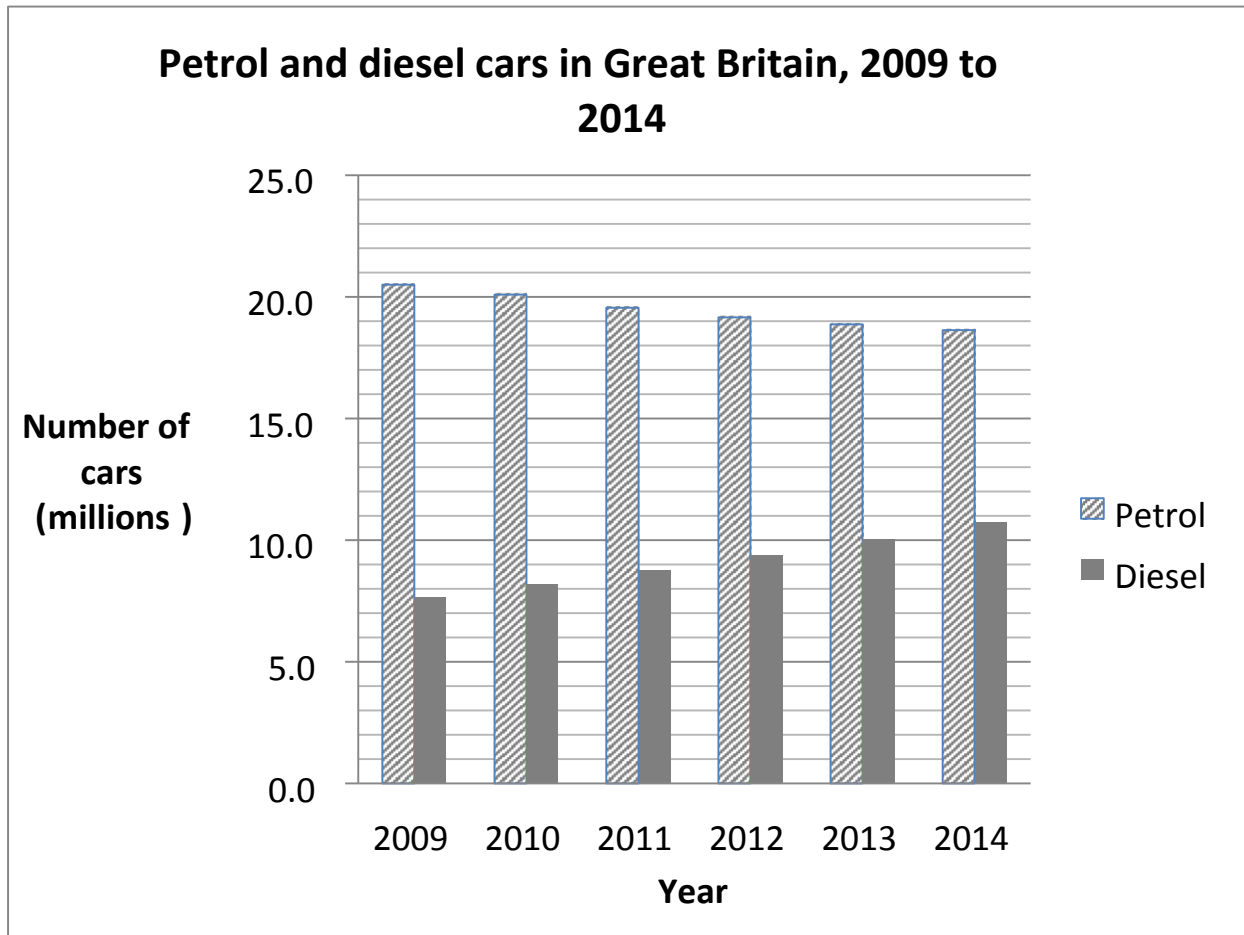
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 Agored Cymru
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Turn over ►



Questions 1 to 5 are about motor vehicles.

- 1 The bar chart shows the number of petrol and diesel cars in Great Britain between 2009 and 2014.



Which one of these statements is true?

| | | |
|----------|---|--|
| A | The number of petrol cars decreased by more than 20% between 2009 and 2014 | |
| B | The number of diesel cars increased by more than half between 2009 and 2014 | |
| C | The number of petrol cars was more than twice the number of diesel cars in 2014 | |
| D | The number of diesel cars was less than half the number of petrol cars in 2009 | |

2 The number of new cars registered in the UK in 2014 was 2.1 million.

This number is forecast to increase by 5% every year for three years.

A dealer wants to work out the number of new cars registered in the third year after 2014, if the forecast is accurate.

Which of these is the correct method?

| | | |
|----------|--|--|
| A | $2.1 \times 10^6 \times 1.5^3$ | |
| B | $2.1 \times 10^6 \times 1.05^3$ | |
| C | $2.1 \times 10^6 \times 1.5 \times 3$ | |
| D | $2.1 \times 10^6 \times 1.05 \times 3$ | |

3 This information is about alternatively fuelled (electric) vehicles (AFVs).

| New AFVs registered in the UK | |
|--------------------------------------|--------------------------|
| Year | Number registered |
| 2014 | 2.3×10^4 |
| 2015 | 3.8×10^4 |

How many more new AFVs were registered in the UK in 2015 than 2014?

| | | |
|----------|--------|--|
| A | 150 | |
| B | 1500 | |
| C | 15000 | |
| D | 150000 | |

- 4 This list appears in a report about the numbers of vehicles in different countries.

| | Country | Vehicles per 1000 people |
|-----------------|--------------|--------------------------|
| 1 st | Australia | 703 |
| 2 nd | France | 582 |
| 3 rd | South Africa | 165 |

The report states that there are approximately 60 000 000 people and 30 000 000 vehicles in the UK.

If the UK was included in the list, in which position would it appear?

| | | |
|---|-----------------|--|
| A | 1 st | |
| B | 2 nd | |
| C | 3 rd | |
| D | 4 th | |

- 5 The value of a new car decreases at the rate of 15% per year.

The value of one model of new car is £20 000

Which of these calculations gives the value of the car after 5 years?

| | | |
|---|--------------------------------------|--|
| A | $20\,000 \times 0.15 \times 5$ | |
| B | $20\,000 \times (1 - 0.15)^5$ | |
| C | $20\,000 \times (1 - 0.15) \times 5$ | |
| D | $20\,000 \times 0.15^5$ | |

Questions 6 and 7 are about motor racing.

6 Sam takes part in motor racing competitions.

The route for a race in the UK is 160 miles long.

A route in France is 320 kilometres long.

Sam uses this information to compare the routes.

| |
|-------------------------|
| 5 miles is 8 kilometres |
|-------------------------|

How much longer is the French route than the UK route, in miles?

| | | |
|---|-----------|--|
| A | 40 miles | |
| B | 100 miles | |
| C | 256 miles | |
| D | 352 miles | |

7 The information in the table is about the first stage of a race.

| Stage | Set time (minutes : seconds) | Sam's time (minutes : seconds) |
|-------|---------------------------------|-----------------------------------|
| 1 | 39 : 50 | 41 : 27 |

In each stage of the race, the time taken by the drivers is compared to a set time.

Drivers score 1 point for every second under the set time.

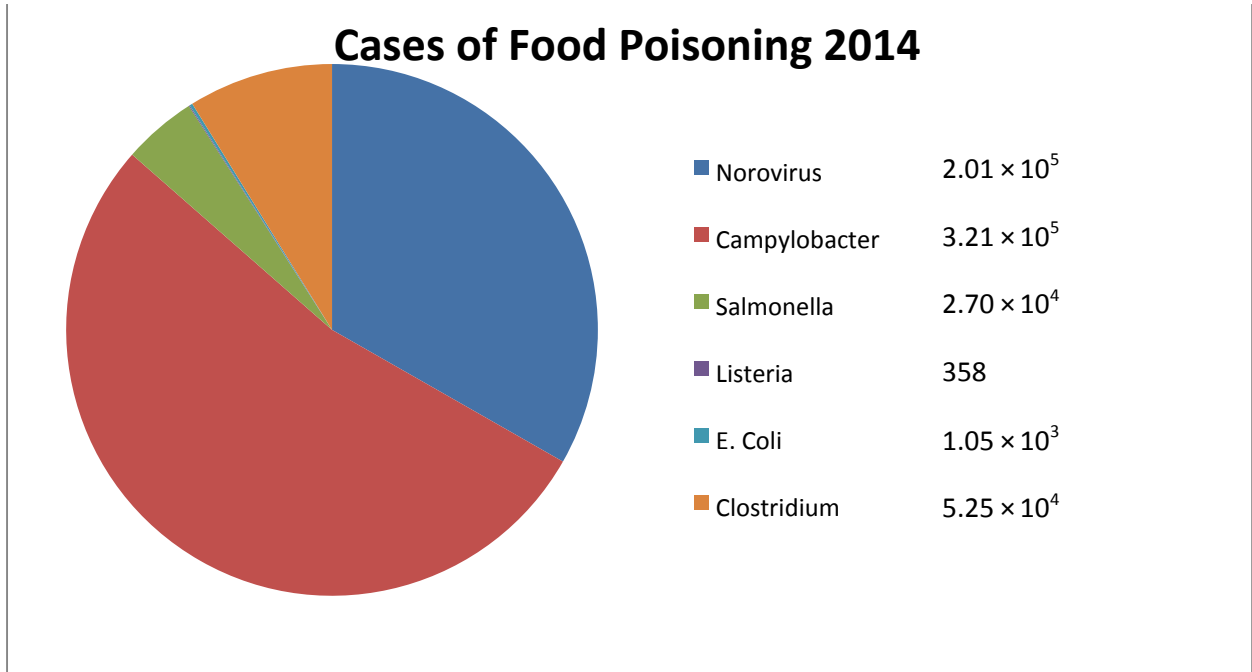
They lose 1 point for every second over the set time.

What is Sam's total points score for this stage of the race?

| | | |
|---|-------|--|
| A | - 177 | |
| B | - 97 | |
| C | + 97 | |
| D | + 177 | |

Questions 8 and 9 are about food poisoning data.

8 The pie chart shows the number and causes of food poisoning in the UK in 2014.



What was the combined total number of food poisoning cases caused by Norovirus and Salmonella?

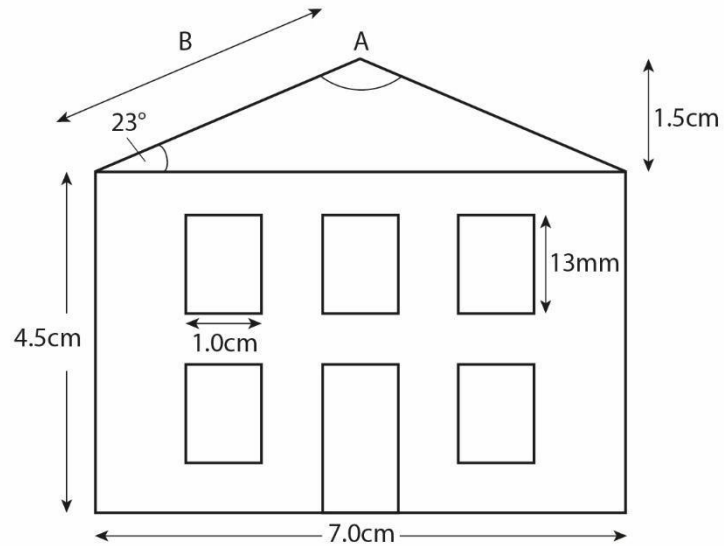
| | | |
|---|--------------------|--|
| A | 2.28×10^5 | |
| B | 22.8×10^5 | |
| C | 2.71×10^4 | |
| D | 2.71×10^5 | |

8. Each case of food poisoning costs the economy £25 per day taken off work. For Salmonella poisoning people take on average 4 days off work. What was the cost to the economy of Salmonella poisoning in 2014?

| | | |
|---|---------------------|--|
| A | $£2.7 \times 10^2$ | |
| B | $£6.75 \times 10^4$ | |
| C | $£1.7 \times 10^5$ | |
| D | $£2.7 \times 10^6$ | |

Questions 10 to 13 are about a scale drawing of a doll's house.

10 The scale drawing is of a doll's house.



The scale is 1:20

What is the angle represented by the letter A?

| | | |
|---|-------------|--|
| A | 113° | |
| B | 134° | |
| C | 136° | |
| D | 157° | |

11 The length of the sloping roof, represented by the letter B on the scale drawing is:

| | | |
|---|-------------------|--|
| A | $\sqrt{14.5}$ cm | |
| B | $\sqrt{51.25}$ cm | |
| C | $\sqrt{5}$ cm | |
| D | $\sqrt{35}$ cm | |

12 A chimney pot measuring 6cm in height is to be added to the top of the actual doll's house.

What height would this be on the scale drawing?

| | | |
|---|-------|--|
| A | 3mm | |
| B | 3cm | |
| C | 1.2cm | |
| D | 12cm | |

13 Each of the five windows shown is identical.

On the actual doll's house the windows will be made of Perspex.

What is the total area of the five windows on the front of the actual doll's house?

| | | |
|---|------------------|--|
| A | 0.26m^2 | |
| B | 2.6m^2 | |
| C | 65cm^2 | |
| D | 0.65m^2 | |

Questions 14 to 16 are about Body Mass Index (BMI).

To check a patient's Body Mass Index (BMI) a doctor uses this formula:

$$\text{BMI} = \frac{W}{H^2}$$

W = weight in kg
 H = height in metres

The table below is used to classify the result.

| BMI | Category |
|------------|-------------|
| Below 18.5 | Underweight |
| 18.5-25 | Normal |
| 25-30 | Overweight |
| Over 30 | Obese |

14 A person with a height of 1.5m has a BMI of 16.

To 1 decimal place, how much weight do they have to gain to reach the normal BMI category?

| | | |
|---|--------|--|
| A | 2.5kg | |
| B | 3.8kg | |
| C | 5.6kg | |
| D | 12.0kg | |

15 To the nearest whole number, what would be the BMI of a person who is 180 cm tall and weighs 64kg?

| | | |
|---|----|--|
| A | 16 | |
| B | 20 | |
| C | 30 | |
| D | 36 | |

16 A person who is 2m tall gains 6kg in weight

How will their BMI change?

| | | |
|---|----------------------|--|
| A | It will go up by 3 | |
| B | It will go up by 1.5 | |
| C | It will go up by 6 | |
| D | It will go up by 12 | |

Questions 17 and 18 are about internet usage.

People in the UK spent on average five hours a week watching TV shows, clips and films on internet-connected devices largely due to the popularity of tablets and smartphones in 2014.

TV programmes proved to be the most popular form of online content viewed by UK users, at an average of two hours and 35 minutes a week.

Films were watched an average of one hour 50 minutes a week, and video clip views averaged 35 minutes a week.

People in London averaged the most time watching online TV programmes (three hours six minutes per week) and films (two hours 27 minutes per week).

A record amount of £3.6bn was spent on internet, smartphone and tablet advertising in the first half of 2014.

17 £3.6bn was spent on internet, smartphone and tablet advertising in the first half of 2014.

40 million people have access to an internet connected device.

On average, how much advertising money is spent on each internet user. (1bn=10⁹)

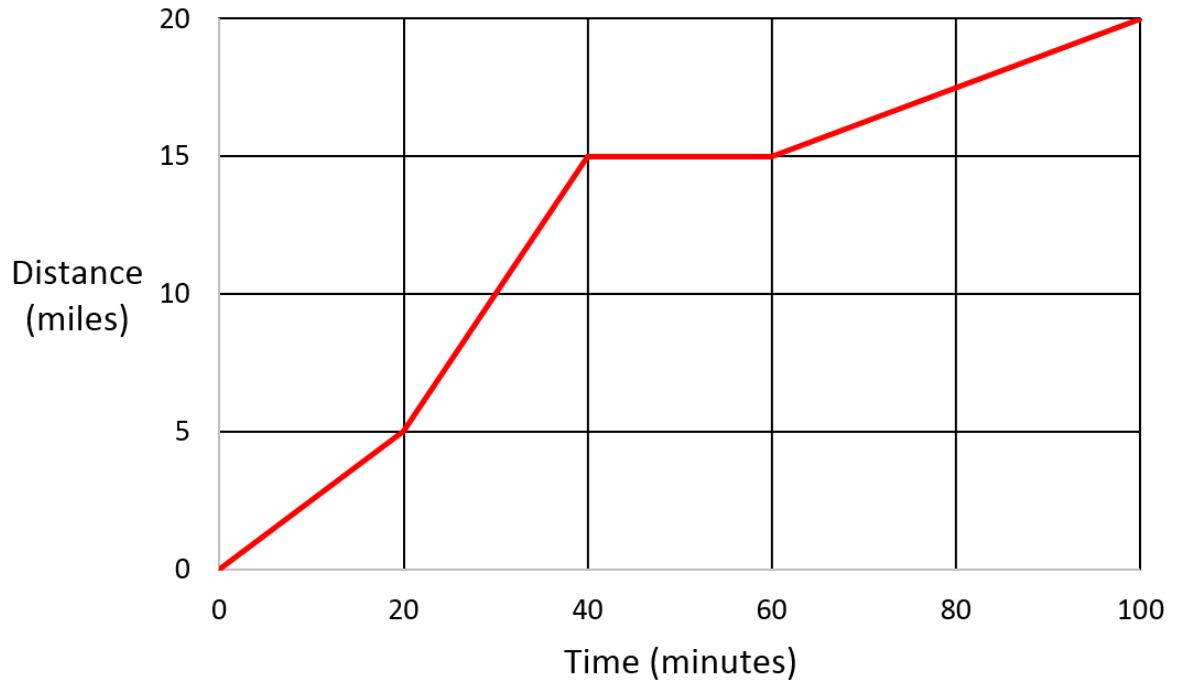
| | | |
|---|----------------------|--|
| A | 9.0×10^{-1} | |
| B | 9.0×10^1 | |
| C | 9.0×10^2 | |
| D | 9.0×10^{-2} | |

18 To the nearest hour, on average, how much longer did Londoners watch TV online per year compared to the UK average?

| | | |
|---|-----------|--|
| A | 26 hours | |
| B | 27 hours | |
| C | 62 hours | |
| D | 161 hours | |

Questions 19 to 21 are about a cycle journey.

19 The graph shows the distance a person travelled on a cycling trip against the time taken.



What speed was the cyclist travelling over the fastest section of the journey?

| | | |
|---|-----------------|--|
| A | 12 miles/hour | |
| B | 15 miles/hour | |
| C | 22.5 miles/hour | |
| D | 30 miles/hour | |

20 What was the cyclist's average speed over the first 40 minutes of the journey?

| | | |
|---|-----------------|--|
| A | 12 miles/hour | |
| B | 15 miles/hour | |
| C | 22.5 miles/hour | |
| D | 30 miles/hour | |

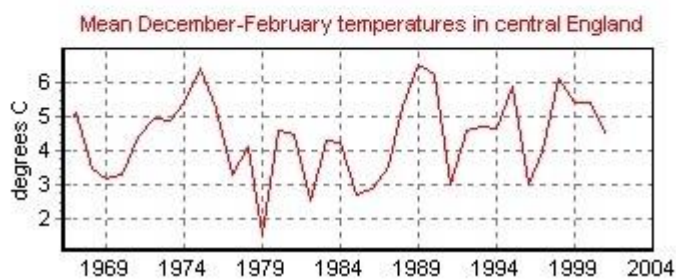
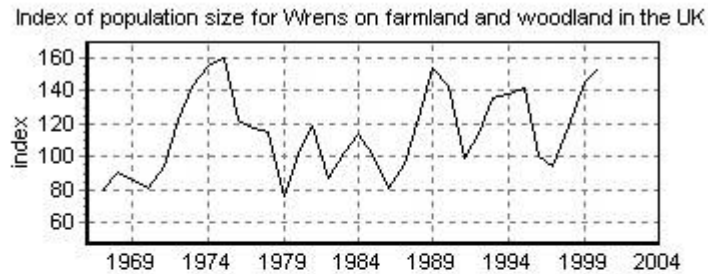
- 21 After 100 minutes the cyclist reaches a downhill section of the journey and averages a speed of 33 miles per hour for 10 minutes before reaching home.

What is the total distance travelled by the cyclist from the start of the trip?

| | | |
|---|-----------|--|
| A | 23.3miles | |
| B | 23.5miles | |
| C | 25.5miles | |
| D | 26.6miles | |

Questions 22 and 23 are about the population of small birds called wrens.

22 The graphs show the population size for wrens in the UK, and the mean December to February temperatures in central England, from 1969 to 2004.



[Source: Census Unit, British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU.]

Which trend do the graphs suggest?

| | | |
|---|---|--|
| A | Wren populations are affected by winter temperatures. | |
| B | The range of temperatures between February and December affect bird population. | |
| C | Bird populations are affected by rainfall | |
| D | Severe winters occur biannually. | |

- 23 The table shows the results of a survey of a number of wrens' nests carried out to find out how many eggs were laid by a pair of birds.

| Number of eggs in a nest | Number of nests |
|--------------------------|-----------------|
| 0 | 2 |
| 1-2 | 3 |
| 3-4 | 9 |
| 5-6 | 32 |
| 7-8 | 48 |

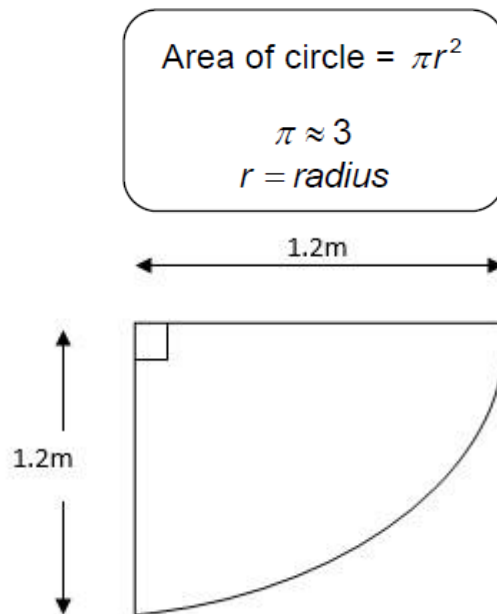
In which group is the median number of eggs laid per nest?

| | | |
|---|-----|--|
| A | 1-2 | |
| B | 3-4 | |
| C | 5-6 | |
| D | 7-8 | |

Questions 24 to 27 are about an ornamental fish pond.

The diagram shows the design of a fish pond.

The fish pond is a $\frac{1}{4}$ circle.



Not to scale

24 The fish pond is filled with water to a depth of 0.6m.
What is the volume of water in the pond?

| | | |
|---|--------------------|--|
| A | 0.54m ³ | |
| B | 0.65m ³ | |
| C | 2.6m ³ | |
| D | 2.2m ³ | |

25 An edging is needed to go around the perimeter of the fish pond. The edging costs £3 per metre.

| | |
|--|-----------------|
| Perimeter of a circle = $\pi \times \text{diameter}$ | $\pi \approx 3$ |
|--|-----------------|

What will be the total cost?

| | | |
|---|--------|--|
| A | £10.80 | |
| B | £21.60 | |
| C | £28.80 | |
| D | £32.40 | |

26 When stocking the pond with fish it is important that it is not overcrowded.

The guidance is a surface area of 60cm^2 is needed for every cm of fish.

The fish chosen are on average 10cm in length.

How many fish are recommended for a pond this size?

| | | |
|---|-----|--|
| A | 11 | |
| B | 18 | |
| C | 72 | |
| D | 180 | |

27 The lengths of the sides of the pool are doubled from 1.2m to 2.4m but the shape remains a quarter of a circle.

By how much will the surface area of the pond increase?

| | | |
|---|-------------------------------------|--|
| A | It will increase by a factor of 1.2 | |
| B | It will increase by a factor of 2 | |
| C | It will increase by a factor of 4 | |
| D | It will increase by a factor of 8 | |

Questions 28 to 30 are about density.

28 Maple wood has a density of 755kg/m^3

| |
|-------------------------------|
| Mass= density x volume |
|-------------------------------|

What is the approximate mass of a piece of maple with a volume 0.25m^3 ?

| | | |
|---|--------|--|
| A | 32kg | |
| B | 53kg | |
| C | 189kg | |
| D | 3020kg | |

29 A piece of gold has a mass of 251g

It has a volume of 13cm^3

| |
|-------------------------------|
| Mass= density x volume |
|-------------------------------|

What is its approximate density?

| | | |
|---|----------------------|--|
| A | 19.3 g/cm^3 | |
| B | 51.8 g/cm^3 | |
| C | 193 g/cm^3 | |
| D | 3263 g/cm^3 | |

30 The density of butter is 865kg/m^3

| |
|-------------------------------|
| Mass= density x volume |
|-------------------------------|

Which of the following is equivalent to 865kg/m^3 ?

| | | |
|---|----------------------|--|
| A | 0.865g/cm^3 | |
| B | 8.65g/cm^3 | |
| C | 86.5g/cm^3 | |
| D | 865g/cm^3 | |

ANSWER SHEET

CANDIDATE
NUMBER:

CENTRE
ID

CANDIDATE
NAME:

Forename & Surname

SUBJECT:

**Essential Application of
Number Skills**

UNIT
CODE:

Level 3

SET NUMBER:

Sample Set

DATE:

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

Signature

- | | | |
|-------------|-------------|-------------|
| 1. a b c d | 21. a b c d | 41. a b c d |
| 2. a b c d | 22. a b c d | 42. a b c d |
| 3. a b c d | 23. a b c d | 43. a b c d |
| 4. a b c d | 24. a b c d | 44. a b c d |
| 5. a b c d | 25. a b c d | 45. a b c d |
| 6. a b c d | 26. a b c d | 46. a b c d |
| 7. a b c d | 27. a b c d | 47. a b c d |
| 8. a b c d | 28. a b c d | 48. a b c d |
| 9. a b c d | 29. a b c d | 49. a b c d |
| 10. a b c d | 30. a b c d | 50. a b c d |
| 11. a b c d | 31. a b c d | 51. a b c d |
| 12. a b c d | 32. a b c d | 52. a b c d |
| 13. a b c d | 33. a b c d | 53. a b c d |
| 14. a b c d | 34. a b c d | 54. a b c d |
| 15. a b c d | 35. a b c d | 55. a b c d |
| 16. a b c d | 36. a b c d | 56. a b c d |
| 17. a b c d | 37. a b c d | 57. a b c d |
| 18. a b c d | 38. a b c d | 58. a b c d |
| 19. a b c d | 39. a b c d | 59. a b c d |
| 20. a b c d | 40. a b c d | 60. a b c d |

Correct Way to Answer

a b c d

Incorrect Way to Answer

a b c d

Altering an Incorrect Answer

a ~~b~~ c d

Only encircle answers which correspond to the questions
For TRUE or FALSE answers only columns a or b should be used