2nd Form Entrance Examination

English

Practice Paper

Time Allowed: 1 hour

• You should spend 30 mins on each of the two questions.
• You should answer each question on a separate piece of lined paper.
• Ensure you write your name on all pieces of paper that you use.
Q1)

Read the description of a natural scene below, which suggests an initial sense of relaxation giving way to a more sinister mood.

Select **four effective words or phrases** from the paragraph. Your choices should include imagery.

Explain how **each** word or phrase selected is used effectively in the context, and in relation to the overall effects of the paragraph.

You should write between half a page and a full page, depending on the size of your handwriting.

The robin skipped along the branch playfully, as the stream chuckled its way over the stones below. A grasshopper lisped its song among the leaves, a frog blew bubbles in the lily-pond, and the sun smiled down on all. But a cloud stole over the sun, spreading a cloak of shadow among the thorn-bushes, and a whispering mist began to spread down from the standing stones on the hill-top.

Q2)

**Practice Writing Tasks**

This task may take a variety of forms but a typical example is provided below:

**Describe an interesting person whom you know, explaining why they appeal to you. The person could be a member of your family or a friend. You may like to consider:**

- Their appearance
- The sort of things they say
- What they do that makes them unusual or funny
## Mark Scheme

**Q1)**

<table>
<thead>
<tr>
<th>Mark</th>
<th>Band</th>
<th>Description of Critical Response</th>
</tr>
</thead>
</table>
| 25   | A    | **Accurate and agile analytical technique**  
Best answers will:  
  • Understand the subtleties in the text  
  • Accurately quote well-chosen details from the text with smooth integration  
  • Develop a convincing analytical response  
  • Cover a clear variety of connotations / effects |
| 24   |      |                                  |
| 23   |      |                                  |
| 22   |      |                                  |
| 21   |      |                                  |
| 20   | B    | **A sound grasp of critical technique**  
Answers will:  
  • Understand the essence of the text, and perhaps some of its subtleties  
  • Use well-chosen quotation, on the whole accurately and smoothly  
  • Make some legitimate analytical points  
  • Cover a range of connotations / effects |
| 19   |      |                                  |
| 18   |      |                                  |
| 17   |      |                                  |
| 16   | C    | **A basic grasp of critical technique**  
Answers may:  
  • Understand the essence of the text, though on the whole not its subtleties  
  • Quote from the text appropriately, but not smoothly  
  • Comment on the text, but with only occasional analytical insight  
  • Cover a limited range of connotations / effects, and only partially develop ideas |
| 15   |      |                                  |
| 14   |      |                                  |
| 13   |      |                                  |
| 12   | D    | **Relatively little grasp of critical technique**  
Responses may:  
  • Comment on the surface meaning, but perhaps make errors of understanding  
  • Make limited use of appropriately chosen quotations, and/or use them ineffectively  
  • Comment on the text without applying an appropriately analytical technique |
| 11   |      |                                  |
| 10   |      |                                  |
| 9    |      |                                  |
| 8    | E    | **Very little discernible grasp of critical technique**  
  • Comment only sparingly on the text  
  • Quote sparingly or only inappropriately  
  • Fail to show an awareness of the need for an analytical approach |
<p>| 7    |      |                                  |
| 6    |      |                                  |
| 5    |      |                                  |
| 4    | F    | <strong>Below E standard</strong>             |
| 3    |      |                                  |
| 2    |      |                                  |
| 1    |      |                                  |</p>
<table>
<thead>
<tr>
<th>Mark</th>
<th>Band</th>
<th>Description</th>
</tr>
</thead>
</table>
| 25   | A    | **Confident and stylistic completion of the task**  
|      |      | *Candidates write accurately, using punctuation to control phrasing, pace, and/or shades of meaning.*  
|      |      | *Responses are relevant, thoughtful, at times subtle, and fully developed.*  
|      |      | *Material is ordered logically, and each stage is carefully linked to the next. Paragraphing is well used.*  
|      |      | *Candidates write with assurance, using a good range of effective vocabulary and varied, well-constructed sentences.* |
| 20   | B    | **Frequent merit and interest in the manner of writing; some sense of craftsmanship**  
|      |      | *Technical errors are minor, and do not impede meaning. There is some use of punctuation to control phrasing, pace or expression.*  
|      |      | *Responses are relevant and thoughtful. Some material is well developed and interesting, although the explanation may not always be consistent.*  
|      |      | *Material is often well ordered. Sentences are mostly well sequenced.*  
|      |      | *Candidates write with some confidence, demonstrating an emergent range of varied vocabulary and some fluency in the construction of sentences.* |
| 16   | C    | **Competent writing with some development of ideas**  
|      |      | *Punctuation is used competently, though it does little to enhance expression. There are a number of errors, including some that affect integrity of sentence construction.*  
|      |      | *Material is expressed in a competent series of generally relevant points and an attempt is made to develop some of them.*  
|      |      | *A clear attempt is made to present material in an orderly way, although there may be some insecurity in the overall structure.*  
|      |      | *Candidates write competently, using appropriate if sometimes unadventurous vocabulary.* |
| 12   | D    | **Appropriate content but little development, and basic expression**  
|      |      | *There is a limited range of punctuation and phrasing, especially relating to sentence separation, and occasional moments which cause the reader difficulty.*  
|      |      | *Material is generally relevant, and partly developed.*  
|      |      | *There is evidence of overall structure, but insecure sequencing.*  
|      |      | *Writing is occasionally varied, usually competent, sometimes ineffective.* |
| 8    | E    | **Simple writing, but with little development or colour**  
|      |      | *There are numerous errors, occasionally considerable, and affecting meaning.*  
|      |      | *Material is variably relevant, and/or only partially developed.*  
|      |      | *There is some attempt at paragraphing, but structure is inconsistent.*  
|      |      | *The writing consists of simple sentence and vocabulary.* |
| 4    | F    | **Below E standard** |

*Asterisked items are a band requirement.*
2nd Form Entrance Exam 2018

Mathematics
Practice Paper 1
100 Marks - 1 Hour
No Calculator

Name:...........................................

School :...........................................

- You must show sufficient working to make your methods clear.
- You should have a pen, pencil, ruler, rubber, compass & protractor
- Write in Black ink and draw in Pencil, use a ruler to draw straight lines.

Result:  /100 = ........%
Question 1

Workout the value of the following

a.) $45 \times 5$

b.) $2.13 \times 100$

c.) $239.6 \div 10$

d.) $-13 \times 10$

e.) $12 \div 0.25$

f.) $2.5 \times 1.5$

(12 Marks)
Question 2

Here is a list of eight numbers

4  5  25  29  30  33  39  40

From the list write down:

a.) A factor of 20

b.) A multiple of 10

c.) The prime number that is greater than 15.

Question 3

Complete the following table

<table>
<thead>
<tr>
<th>+</th>
<th>2.5</th>
<th>1/2</th>
<th>-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question 4

Look at the pattern made from dots below.

![Patterns](image)

<table>
<thead>
<tr>
<th>Pattern Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Dots</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Complete the table. (3 marks)

This rule can be used to find the number of dots in each pattern.

Number of dots = Pattern number x 4 - 3

(b) How many dots are in pattern number 20?

...............(2)
(5 Marks)

---

Question 5

a.) Find 95% of £550

...............(3)

b.) Complete the following table. You must write the fractions in their simplest form.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Fraction</th>
<th>Decimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>3/4</td>
<td>0.15</td>
</tr>
<tr>
<td>85%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question 6

Find the Surface Area of the cuboid:

![Cuboid diagram]

Question 7

4. (a) Simplify $x + x + x + x + x$

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

(b) Simplify $6x + 3y - 2x + 5y$

............. (2)

(c) Solve $3x - 4 = 20$

$X=............. (1)$

(4 Marks)
Question 8

Find the area of the shaded shape:

(4 Marks)
Section 2 – Money and Time Functional Skills Problems

Question 9

This is part of a list of TV programmes for 1 evening:

- 18:00 Tikkabilla
- 18:30 Teletubbies
- 19:00 Lunar Jim
- 19:10 Kerwhizz
- 19:35 Lazy Town
- 20:00 ChuckleVision
- 20:15 Arthur
- 20:30 Richard Hammond’s Blast Lab

a.) Which TV programme lasts for 10 minutes?

……………………….(1)

b.) Brian turned on his TV set at 17:40. How many minutes did he have to wait for the start of Arthur?

……………………….(2)

(5 marks)

c.) Richard Hammond’s Blast Lab lasts for 45 minutes. At what time did the programme end?

……………………….(2)

Question 10

How many hours past between 12:30pm on Monday 18th of June and 9am Wednesday 20th June?

(3 marks)
Question 11

The table gives information about the prices and the features of five mobile phones. The ticks (✓) in the table show the features of each phone.

<table>
<thead>
<tr>
<th>Mobile phone</th>
<th>Price</th>
<th>Camera</th>
<th>MP3</th>
<th>FM Radio</th>
<th>Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astra</td>
<td>£24.97</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystal</td>
<td>£24.97</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pixar</td>
<td>£39.97</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Spark</td>
<td>£34.23</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tacco</td>
<td>£34.97</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

(a) Which of the five mobile phones is the most expensive?

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

(b) Which of the mobile phones have MP3?

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

(c) Which mobile phone has Video but **not** FM Radio?

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

(3 Marks)
Question 12

Here is the price list at Pete’s café.

Susan buys

- **two** cups of tea,
- a sausage roll and
- a sandwich.

She pays with a £10 note.

(a) How much change should she get?

---

<table>
<thead>
<tr>
<th>Pete’s Café</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price List</strong></td>
</tr>
<tr>
<td>Cup of Tea</td>
</tr>
<tr>
<td>Cup of Coffee</td>
</tr>
<tr>
<td>Can of Cola</td>
</tr>
<tr>
<td>Filled roll</td>
</tr>
<tr>
<td>Sandwiches</td>
</tr>
<tr>
<td>Sausage roll</td>
</tr>
</tbody>
</table>

---

Jodie stops at Pete’s café.
She only has £3.60 in her purse.

She wants to buy a drink and something to eat.

(b) Find the cost of all the different combinations she could buy.

£ .................(2)

£ ...................(3)

(5 Marks)
Question 13

Complete this bill:

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>Cost of each item</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spark plug</td>
<td>4</td>
<td>£2.50</td>
<td>£10.00</td>
</tr>
<tr>
<td>Wiper blade</td>
<td>2</td>
<td>£1.50</td>
<td>£ .......</td>
</tr>
<tr>
<td>Light bulb</td>
<td>2</td>
<td>£ ......</td>
<td>£ 5.00</td>
</tr>
<tr>
<td>Labour charge</td>
<td>1½ hours at £16.00 an hour</td>
<td>£ .........</td>
<td></td>
</tr>
</tbody>
</table>

**Total cost** £ .........

(4 marks)
Question 14

From his yacht Peter can see two lighthouses.

One of them flashes every 120 seconds.
The other flashes every 100 seconds.

At 4 p.m. both lighthouses flash at the same time.

At what time will both lighthouses next flash at the same time.
Section 3 – Probability & Handling Data

Question 15
60 students were asked how they travelled to school.

The table gives information about their method of transport.

<table>
<thead>
<tr>
<th>Method of transport</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>16</td>
</tr>
<tr>
<td>Bus</td>
<td>14</td>
</tr>
<tr>
<td>Walk</td>
<td>25</td>
</tr>
<tr>
<td>Bicycle</td>
<td>5</td>
</tr>
</tbody>
</table>

On the graph paper below, produce a bar chart to display this data.
Question 16
The diagram shows some letters on some cards.

(a) Which letter is **most** likely to be on the card?

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

(b) Which letter is **least** likely to be on the card?

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

(2 Marks)
Question 17

Here is a set of data:

2.5, 3, 0, 0.5, 4, -2, 5, -2, 7

da.) Find the mean of this set of data:

..............................................(2)

c.) Write the data in order of size, smallest to largest

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

d.) Find the median of the set of data

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

e.) Find the range of the set of data

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

(5 marks)
Question 18

1. Here is an incomplete pictogram.

It shows some information about the number of books sold during one week from Monday to Thursday.

<table>
<thead>
<tr>
<th>Day</th>
<th>Books Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td>20</td>
</tr>
<tr>
<td>Saturday</td>
<td>35</td>
</tr>
</tbody>
</table>

(a) Write down the number of books sold on

(i) Wednesday

(ii) Thursday

On Friday, 20 books were sold.

(b) Show this on the pictogram

On Saturday, 35 books were sold.

(c) Show this on the pictogram.

(4 Marks)
Question 19

Draw a circle around the word, or words, which best describe the following possibilities.

(a) It will rain in Manchester next September.

impossible unlikely even chance likely certain

(1)

(b) The next baby born in London will be a girl.

impossible unlikely even chance likely certain

(1)

(c) If I toss a coin once, the outcome is a head and a tail.

impossible unlikely even chance likely certain

(1)

(d) A choose at random the 3 of diamonds from an ordinary pack of cards

impossible unlikely even chance likely certain

(1) (4 Marks)
Question 20

1. A doctor asks her patients how long they spend exercising per day, and plots a scatter graph against their body masses.

(a) Draw a line of best fit on the graph.  (2)

(b) Predict the weight of a person who exercises for 15 minutes per day.

_____________ kg  (1)

(c) A patient weighing 52 kg who exercises for 15 minutes is seen by the doctor. Add a point to the graph to represent this patient.

(Total 5 Marks)

END  (100 marks)
Mathematics
Practice Paper 1
100 Marks - 1 Hour
No Calculator

Name: ..............................................

School: ............................................

- You must show sufficient working to make your methods clear.
- You should have a pen, pencil, ruler, rubber, compass & protractor
- Write in Black ink and draw in Pencil, use a ruler to draw straight lines.

Result: \( \frac{\text{marks}}{100} = \text{......\%} \)
Section 1 – Number, Algebra & Geometry Skills

Question 1

Workout the value of the following

a.)  $45 \times 5$

b.)  $2.13 \times 100$

c.)  $239.6 \div 10$

d.)  $-13 \times 10$

e.)  $12 \div 0.25$

f.)  $2.5 \times 1.5$

90

213

23.96

-130

48

3.75

(12 Marks)
Question 2

Here is a list of eight numbers

4  5  25  29  30  33  39  40

From the list write down:

a.) A factor of 20
    4 or 5  (1)

b.) A multiple of 10
    30 or 40  (1)

c.) The prime number that is greater than 15.
    29  (1)

(3 Marks)

Question 3

Complete the following table

<table>
<thead>
<tr>
<th></th>
<th>2.5</th>
<th>1/2</th>
<th>-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/2</td>
<td>4</td>
<td>2</td>
<td>1/2</td>
</tr>
<tr>
<td>-5</td>
<td>-2.5</td>
<td>-4.5</td>
<td>-6</td>
</tr>
<tr>
<td>3.6</td>
<td>6.1</td>
<td>4.1</td>
<td>2.6</td>
</tr>
</tbody>
</table>

(9 Marks)
Question 4

Look at the pattern made from dots below.

![Patterns](image)

<table>
<thead>
<tr>
<th>Pattern Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Dots</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Complete the table. (3 marks)

This rule can be used to find the number of dots in each pattern.

Number of dots = Pattern number \( \times 4 - 3 \)

(b) How many dots are in pattern number 20?

\[ 20 \times 4 - 3 = 77 \]

(5 Marks)

Question 5

a.) Find 95% of £550

\[ 550 \times 0.95 = 522.5 \]

(3 marks)

b.) Complete the following table. You must write the fractions in their simplest form.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Fraction</th>
<th>Decimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>( \frac{1}{4} )</td>
<td>0.25</td>
</tr>
<tr>
<td>75%</td>
<td>( \frac{3}{4} )</td>
<td>0.75</td>
</tr>
<tr>
<td>15%</td>
<td>( \frac{3}{20} )</td>
<td>0.15</td>
</tr>
<tr>
<td>85%</td>
<td>( \frac{17}{20} )</td>
<td>0.85</td>
</tr>
</tbody>
</table>

(7 marks)
Question 6

Find the Surface Area of the cuboid:

\[ \begin{align*}
2 \times 5 &= 10 \\
2 \times 7 &= 14 \\
5 \times 7 &= 35 \\
59 \times 2 &= 118 \text{ cm}^2
\end{align*} \]

(6 marks)

Question 7

4. (a) Simplify \( x + x + x + x + x \)

\[ 5x \hspace{1cm} (1) \]

(b) Simplify \( 6x + 3y - 2x + 5y \)

\[ 4x + 8y \hspace{1cm} (2) \]

(c) Solve \( 3x - 4 = 20 \)

\[ 3x = 24 \]

\[ x = 8 \hspace{1cm} (1) \]

(4 Marks)
Question 8

Find the area of the shaded shape:

\[ 12 \times 7 = 84 \]  
\[ \frac{3 \times 6}{2} = 6 \]  
\[ 84 + 6 = 90 \text{ cm}^2 \]  

(4 Marks)
Section 2 – Money and Time Functional Skills Problems

Question 9

This is part of a list of TV programmes for 1 evening:

<table>
<thead>
<tr>
<th>Time</th>
<th>Programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 00</td>
<td>Tikkabilla</td>
</tr>
<tr>
<td>18 30</td>
<td>Telenobbies</td>
</tr>
<tr>
<td>19 00</td>
<td>Lunar Jim</td>
</tr>
<tr>
<td>19 10</td>
<td>Kerwhizz</td>
</tr>
<tr>
<td>19 35</td>
<td>Lazy Town</td>
</tr>
<tr>
<td>20 00</td>
<td>ChuckleVision</td>
</tr>
<tr>
<td>20 15</td>
<td>Arthur</td>
</tr>
<tr>
<td>20 30</td>
<td>Richard Hammond’s Blast Lab</td>
</tr>
</tbody>
</table>

a.) Which TV programme lasts for 10 minutes?

b.) Brian turned on his TV set at 1740. How many minutes did he have to wait for the start of Arthur?

\[20 + 15\]

\[35\]

(2 marks)

[Diagram: Calculation]

\[8.30 + 30 + 15\]

\[9.15\]

(5 marks)

Question 10

How many hours past between 12.30pm on Monday 18th of June and 9am Wednesday 20th June?

\[11.5 + 24 + 9\]

\[44.5\]

(3 marks)
Question 11

The table gives information about the prices and the features of five mobile phones. The ticks (✓) in the table show the features of each phone.

<table>
<thead>
<tr>
<th>Mobile phone</th>
<th>Price</th>
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<th>MP3</th>
<th>FM Radio</th>
<th>Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astra</td>
<td>£24.97</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystal</td>
<td>£24.97</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Pixar</td>
<td>£39.97</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Spark</td>
<td>£34.23</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tacco</td>
<td>£34.97</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

(a) Which of the five mobile phones is the most expensive?

(b) Which of the mobile phones have MP3?

(c) Which mobile phone has Video but not FM Radio?

Pixar

Pixar and Tacco

Crystal

(3 Marks)
Question 12

Here is the price list at Pete’s café.

Susan buys

- two cups of tea,
- a sausage roll and
- a sandwich.

She pays with a £10 note.

(a) How much change should she get?

\[
\begin{align*}
1.25 \\
1.25 \\
1.75 \\
2.95 \\
\hline
7.20
\end{align*}
\]

\[10.00 - 7.20 = 2.80\]

(b) Jodie stops at Pete’s café. She only has £3.60 in her purse.

She wants to buy a drink and something to eat.

Find the cost of all the different combinations she could buy.

1. Tea/Roll £3.50
2. Tea/Saus £3.00
3. Cola/Roll £3.20
4. Cola/Saus £2.70

£ \[\text{(5 Marks)}\]
Question 13

Complete this bill:

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>Cost of each item</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spark plug</td>
<td>4</td>
<td>£2.50</td>
<td>£ 10.00</td>
</tr>
<tr>
<td>Wiper blade</td>
<td>2</td>
<td>£1.50</td>
<td>£ 3.00</td>
</tr>
<tr>
<td>Light bulb</td>
<td>2</td>
<td>£2.50</td>
<td>£ 5.00</td>
</tr>
<tr>
<td>Labour charge</td>
<td>1 1/2 hours at £ 16.00 an hour</td>
<td>£ 24.00</td>
<td></td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td></td>
<td></td>
<td>£ 42.00</td>
</tr>
</tbody>
</table>

(4 marks)
Question 14

From his yacht Peter can see two lighthouses.

One of them flashes every 120 seconds.
The other flashes every 100 seconds.

At 4 p.m. both lighthouses flash at the same time.

At what time will both lighthouses next flash at the same time?

600 seconds = 10 minutes

4.10 p.m.
Section 3 – Probability & Handling Data

Question 15
60 students were asked how they travelled to school.

The table gives information about their method of transport.

<table>
<thead>
<tr>
<th>Method of transport</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>16</td>
</tr>
<tr>
<td>Bus</td>
<td>14</td>
</tr>
<tr>
<td>Walk</td>
<td>25</td>
</tr>
<tr>
<td>Bicycle</td>
<td>5</td>
</tr>
</tbody>
</table>

On the graph paper below, produce a bar chart to display this data.
Question 16
The diagram shows some letters on some cards.

A A A A
B B B B
C C C C
D

Tamara takes a card at random.

(a) Which letter is most likely to be on the card?

(b) Which letter is least likely to be on the card?
Question 17

Here is a set of data:

2.5, 3, 0, 0.5, 4, -2, 5, -2, 7

a.) Find the mean of this set of data:

\[
\frac{2.5 + 3 + 0 + 0.5 + 4 - 2 + 5 - 2 + 7}{9}
\]

\[2.0\]

b.) Find the median of the set of data

\[2.5\]

c.) Write the data in order of size, smallest to largest

\[-2, -2, 0, 0.5, 2.5, 3, 4, 5, 7\]

d.) Find the range of the set of data

\[7 - (-2)\]

\[9\]

(5 marks)
Question 18

1. Here is an incomplete pictogram.

It shows some information about the number of books sold during one week from Monday to Thursday.

```
<table>
<thead>
<tr>
<th>Day</th>
<th>Pictograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>3</td>
</tr>
<tr>
<td>Tuesday</td>
<td>4</td>
</tr>
<tr>
<td>Wednesday</td>
<td>5</td>
</tr>
<tr>
<td>Thursday</td>
<td>2</td>
</tr>
<tr>
<td>Friday</td>
<td>3</td>
</tr>
<tr>
<td>Saturday</td>
<td>3</td>
</tr>
</tbody>
</table>
```

Key:

- Represents 10 books

(a) Write down the number of books sold on
   (i) Wednesday
   (ii) Thursday

   Wednesday: 30
   Thursday: 15

On Friday, 20 books were sold.

(b) Show this on the pictogram

On Saturday, 35 books were sold.

(c) Show this on the pictogram.

(4 Marks)
Question 20

Draw a circle around the word, or words, which best describe the following possibilities.

(a) It will rain in Manchester next September.

impossible unlikely even chance likely certain

(b) The next baby born in London will be a girl.

impossible unlikely even chance likely certain

(c) If I toss a coin once, the outcome is a head and a tail.

impossible unlikely even chance likely certain

(d) A choose at random the 3 of diamonds from an ordinary pack of cards

impossible unlikely even chance likely certain

(4 Marks)
1. A doctor asks her patients how long they spend exercising per day, and plots a scatter graph against their body masses.

(a) Draw a line of best fit on the graph. 

(b) Predict the weight of a person who exercises for 15 minutes per day.

\[ \text{85 kg} \]

(c) A patient weighting 52 kg who exercises for 15 minutes is seen by the doctor. Add a point to the graph to represent this patient.
Denstone College

2nd Form Science Entrance Practice Paper 2018

Name: ________________________________

Candidate No: ____

Time allowed 60 mins

Please answer all questions.

Use a pencil on any graph questions

<table>
<thead>
<tr>
<th>Total /60</th>
<th>Percentage Score</th>
</tr>
</thead>
</table>
Q1. The diagram shows a plant cell.

(a) Give the name of part A.
........................................................................................................................................
Give the function of part A.
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................ 2 marks

(b) Give the name of part E.
........................................................................................................................................
Give the function of part E.
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................ 2 marks

(c) Give the letters of two parts that are present in plant cells but not in animal cells.
..................... and ..................
........................................................................................................................................ 1 mark

(d) How can you tell that the cell in the diagram is from a leaf and not from a root?
........................................................................................................................................ 1 mark
maximum 6 marks
Q2. The drawing shows eight living things.

Eight living things are drawn.

Give the letters of:

(a) one living thing which uses gills to take in oxygen;  

(b) one living thing which produces seeds;  

(c) one living thing which uses lungs to breathe;
(d) two living things which lay eggs in water;  
................................. and .................................  

(e) two living things which are covered in scales.  
................................. and .................................  

2 marks  
Maximum 7 marks

Q3. Every autumn the BBC asks people all over the UK to record when and where they see the first ripe conkers. The results are shown on a website. Conkers only ripen in the autumn.

Information from http://www.bbc.co.uk/nature/animals/wildbritain/autumnwatch/results/conkers.html (December 2005)
(a) Some pupils discussed these results and made some conclusions.

Tick a box in each row to say whether the conclusion is **true** or **false** or whether you **cannot tell** based on the results.

<table>
<thead>
<tr>
<th>Conclusion</th>
<th>True</th>
<th>False</th>
<th>Cannot Tell</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are more conkers in 2005 than there have been in other years.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are only 248 conker trees in the UK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The most common time for the first ripe conkers was in September.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The number of sightings decreased between August and September.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 marks

(b) The map shows where members of the public saw ripe conkers in the UK.

(i) Suggest one reason why it is a good idea to collect data by asking the public to observe when conkers ripen.

........................................................................................................................................
........................................................................................................................................

........................................................................................................................................

........................................................................................................................................

1 mark
(ii) Suggest one reason why it is not a good idea to collect data by asking the public to observe when conkers ripen.

.................................................................................................................................................................................................

...............................................................................................................................................................................................................

...............................................................................................................................................................................................................

1 mark

(c) The data was collected in one year.

What data would the BBC need to collect to find out if the time of year in which conkers ripen is changing?

...............................................................................................................................................................................................................

1 mark

(d) Conkers ripen earlier in the south of the country than in the north.

Suggest why conkers ripen earlier in the south.

...............................................................................................................................................................................................................

1 mark

maximum 6 marks

Q4. Solids, liquids and gases have different properties and different uses. Some of these are described in the table.

Tick either one or two boxes in each row to show whether a solid, liquid or gas matches the description in that row.

<table>
<thead>
<tr>
<th>property or use</th>
<th>solid</th>
<th>liquid</th>
<th>gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>it is used to build rigid or stiff structures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>it flows easily through a pipe or tube</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>it can be squeezed into a much smaller volume</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 marks
Q5.  (a) Draw a line from each change of state to the correct name. Draw only four lines.

<table>
<thead>
<tr>
<th>change of state</th>
<th>name</th>
</tr>
</thead>
<tbody>
<tr>
<td>solid to liquid</td>
<td>evaporating</td>
</tr>
<tr>
<td>liquid to gas</td>
<td>melting</td>
</tr>
<tr>
<td>gas to liquid</td>
<td>condensing</td>
</tr>
<tr>
<td>liquid to solid</td>
<td>freezing</td>
</tr>
</tbody>
</table>

(b) Kate made some ice cubes from pure water. She used a sensor to measure the temperature of the ice.

What temperature will the sensor show when the ice is melting?

.............. °C

1 mark
(c) Kate made some more ice cubes from salt solutions. She used a different amount of salt in each ice cube.

The table shows the temperature at which the ice cubes melted.

<table>
<thead>
<tr>
<th>mass of salt in each ice cube (g)</th>
<th>temperature ice cube melted (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>−4</td>
</tr>
<tr>
<td>10</td>
<td>−8</td>
</tr>
<tr>
<td>15</td>
<td>−11</td>
</tr>
<tr>
<td>20</td>
<td>−15</td>
</tr>
</tbody>
</table>

Look at the table above.
As the mass of salt increased, what happened to the temperature at which the ice cube melted?

........................................................................................................................
1 mark

(d) In very cold weather a mixture of salt and sand is spread on roads.

Why are salt and sand used?
Tick the two correct boxes.

Salt makes the roads white.  
Sand makes ice melt.

Sand dissolves in water.  
Sand makes water freeze.

Sand increases friction between car tyres and the road.

2 marks
maximum 7 marks
Q6. Sharna boiled some red cabbage in water. The cabbage-water turned purple.

![Diagram](image)

red cabbage → purple cabbage-water → heat

(a) (i) Sharna separated pieces of cabbage from the cabbage-water. Which method did she use? Tick the correct box.

- Chromatography
- Filtration
- Condensation
- Freezing

1 mark

(ii) Sharna wanted to find out if the purple cabbage-water contained more than one coloured substance. Which method did she use? Tick the correct box.

- Chromatography
- Filtration
- Condensation
- Freezing

1 mark
(b) Sharna mixed the purple cabbage-water with some other liquids. She wrote the colours of the mixtures in a table as shown below.

<table>
<thead>
<tr>
<th>liquid</th>
<th>red</th>
<th>acidic</th>
</tr>
</thead>
<tbody>
<tr>
<td>liquid 2</td>
<td>blue</td>
<td>alkaline</td>
</tr>
<tr>
<td>liquid 3</td>
<td>purple</td>
<td>neutral</td>
</tr>
</tbody>
</table>

Use the information in the table to answer parts (i) and (ii) below.

(i) Sharna mixed cabbage-water with colourless washing-up liquid. The mixture turned blue.

What does this tell you about the washing-up liquid?

.............................................................................................................

(i) 1 mark

(ii) Sharna then mixed cabbage-water with lemon juice. Lemon juice is acidic.

What colour was the mixture?

.................................................................................................

(ii) 1 mark

(c) What is the name of a chemical which changes colour when it is mixed with acids or alkalis?

Tick the correct box.

filtrate  indicator  non-metal

maximum 5 marks
Q7. Amena described her idea about the evaporation of water.

I think that water evaporates faster if temperature is increased.

Amena

(a) Write a plan for an investigation you could carry out in the school laboratory to test Amena’s idea. Assume you have access to all the usual laboratory equipment.

In your plan you must write:

• the one factor you would change as you carry out your investigation (the independent variable)

• the effect you would observe or measure as you carry out your investigation (the dependent variable)

• one factor you would keep the same to help make your test fair.

.................................................................................................................................................................................. 3 marks
(b) In the box below, draw and label a table that you could use to record your results.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 mark
maximum 4 marks
8. Meera used the Internet to find out about energy resources. The drawing below shows what Meera saw on her computer screen.

(a) Coal is a fossil fuel. Give the names of two other fossil fuels in the list on the screen.

............................................................and............................................................ 2 marks

(b) (i) Wave energy is an example of a renewable energy resource. From the list on the screen above choose two other renewable energy resources.

............................................................and............................................................ 2 marks

(ii) Meera found out how wave energy can be used to generate electricity. She saw the diagram below on the Internet.
Each box below shows a stage in generating electricity.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The air turns the turbine.</td>
</tr>
<tr>
<td>B</td>
<td>The turbine turns the generator.</td>
</tr>
<tr>
<td>C</td>
<td>The waves move up the chamber.</td>
</tr>
<tr>
<td>D</td>
<td>The generator produces electricity.</td>
</tr>
<tr>
<td>E</td>
<td>The waves push the air up the chamber.</td>
</tr>
</tbody>
</table>

On the lines below write the letters of the stages in the correct order. Two have been done for you.

.....C..... ........... .....A..... ........... ...........
9 (a) The diagram below shows a circuit with a two-way switch, S.

Rosie puts the switch in the position shown below.

Complete the table below to show if the bulbs are on or off. Write on or off for each bulb.

<table>
<thead>
<tr>
<th>bulb</th>
<th>on or off</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td></td>
</tr>
</tbody>
</table>

(b) Give the name of the part that provides energy for the circuit.

..............................................................................................

1 mark
(c) The diagrams below show a light-bulb over a staircase of a model house.

There is a two-way switch at the bottom of the stairs and another two-way switch at the top.

Under each diagram, tick one box to show if the bulb is on or off. The first one has been done for you.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>on</td>
<td>✓</td>
</tr>
<tr>
<td>off</td>
<td></td>
</tr>
</tbody>
</table>

2 marks maximum 4 marks
10) Joe makes two bridges from strips of cardboard cut as shown.

Joe tests the bridges by adding masses to them. He measures the distance from the bench to the bottom of each bridge for different masses as shown.

(a) Suggest two things Joe must do to make his test fair.

1. .................................................................................................................... 1 mark

2. .................................................................................................................... 1 mark
Here are Joe’s results.

<table>
<thead>
<tr>
<th>mass added to bridge (g)</th>
<th>distance from bench to bottom of bridge (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bridge A</td>
</tr>
<tr>
<td>0</td>
<td>7.2</td>
</tr>
<tr>
<td>100</td>
<td>7.1</td>
</tr>
<tr>
<td>200</td>
<td>7.0</td>
</tr>
<tr>
<td>250</td>
<td>6.8</td>
</tr>
<tr>
<td>300</td>
<td>3.0</td>
</tr>
<tr>
<td>350</td>
<td>0.0</td>
</tr>
</tbody>
</table>

(b)  
(i) Joe put 325g on each bridge.  
Using the results table, estimate the distance from each bridge to the bench.  
bridge A ............ cm  
bridge B ............ cm  
1 mark

(ii) Suggest what happened to bridge A when it was loaded with 350g.  
.............................................................................................................  
1 mark

(c)  
(i) Which bridge would be better for carrying a 200g toy car?  
Tick the correct box.  

bridge A [ ] bridge B [ ]  

Explain your answer.  
.............................................................................................................  
.............................................................................................................  
1 mark

(ii) Which bridge would be better for carrying a 300g toy car?  
Tick the correct box.  

bridge A [ ] bridge B [ ]  

Explain your answer.  
.............................................................................................................  
.............................................................................................................  
1 mark
11 (a) The diagram below shows the positions of the Sun, Moon and Earth during a solar eclipse.

Write numbers (1–4) on the diagram below to label the features during an eclipse.

1. the Earth
2. the Moon
3. the Sun
4. a region where the total eclipse of the Sun is taking place

(b) Scientists discovered a regular cycle of eclipses. It is called the Saros cycle.

The table below shows the dates of some eclipses in this cycle.

Complete the table by predicting the date of the next eclipse in the Saros cycle.

<table>
<thead>
<tr>
<th>eclipse</th>
<th>date</th>
</tr>
</thead>
<tbody>
<tr>
<td>eclipse 1</td>
<td>20th July 1963</td>
</tr>
<tr>
<td>eclipse 2</td>
<td>31st July 1981</td>
</tr>
<tr>
<td>eclipse 3</td>
<td>11th August 1999</td>
</tr>
<tr>
<td>eclipse 4</td>
<td></td>
</tr>
</tbody>
</table>
END OF PAPER
MARKING SCHEME

M1. (a) • chloroplast

*accept ‘chlorophyll’*

any one from

• photosynthesis

*accept ‘it produces food or glucose or sugar or carbohydrate’*

‘contains chlorophyll’ is insufficient

• absorbs or traps light

1 (L6)

(b) • nucleus

1 (L6)

• it controls the cell

*accept ‘it tells the cell what to do’*

‘brain of the cell’ is insufficient

*accept ‘it transfers or contains genetic information or chromosomes’*

*do not* accept ‘for reproduction’

‘it controls substances entering or leaving the cell’ is insufficient

1 (L6)

(c) any two from

• A

• B

• D

*accept ‘chloroplast’ or ‘chlorophyll’*

*accept ‘vacuole’*

*accept ‘cell wall’*

1 (L6)

(d) • it has chloroplasts or chlorophyll

*accept ‘it is green’*

‘it is a different shape’ is insufficient

‘it does not have a hair’ is insufficient

1 (L6)
M2. (a) E
accept ‘fish’

(b) B or D or H
accept ‘flower’ or ‘tree’ or ‘grass’

(c) A or C or F or G
accept ‘bird’ or ‘boy’ or ‘frog’ or ‘snake’

(d) answers may be in either order
E
accept ‘fish’

F
accept ‘frog’

(e) answers may be in either order
E
accept ‘fish’

G
accept ‘snake’

M3. (a) True False Cannot tell

all four ticks are required for two marks
any two or three correct ticks are required for one mark
if more than one box is ticked in any row,
do not give credit for that row
(b) (i) any one from

- there are a large number of observations
  accept ‘lots of people made observations’
- the observations are made over a wide area
  accept ‘people see them in a lot of different places’
  accept ‘you do not have to pay them’
  accept ‘it makes it more reliable’
  accept ‘people knew where to look for conkers’

(ii) any one from

- they are not spread uniformly over the country
- the data is not representative of the conker tree population
  accept ‘they could count the same conker twice’
- the people may not know what a (ripe) conker looks like
  or whether a conker is ripe
- the results may not be very reliable
  accept ‘people can make it up’
  accept ‘people may not respond’
  if the response ‘it makes it more reliable’ is given in bi,
  do not credit ‘it is less reliable’ in bii unless they
  describe how it is more and less reliable

(c) they would need to collect data each year or for more than one year

  accept ‘repeat each year’
  ‘repeat it’ is insufficient

(d) any one from

- it is warmer
  accept ‘it is cooler in the north’
  ‘there is better weather in the south’ is insufficient
- there is more energy from the Sun
  accept ‘the Sun is brighter’
  ‘it is nearer the equator’ is insufficient
  ‘there is more sun’ is insufficient as there are
  more hours of daylight in the north in summer
  accept ‘they flower earlier’
  ‘they ripen faster’ is insufficient
M4.

<table>
<thead>
<tr>
<th>solid</th>
<th>liquid</th>
<th>gas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

if more than one box is ticked award no mark
if three boxes are ticked award one mark
if more than one box is ticked award no mark

M5.

(a) •

- solid to liquid
- liquid to gas
- gas to liquid
- liquid to solid
- evaporating
- melting
- condensing
- freezing

award three marks for all four correct lines
award two marks for any three correct lines
award one mark for any two correct lines
if more than one line is drawn from any change of state, do not credit that change of state

3 (L3)

(b) • 0 °C

accept ‘zero’
do not accept ‘nothing’

1 (L4)

(c) • it decreased

accept ‘it got colder’
‘it dropped to below 0°C’ is insufficient
any references to time are insufficient

(d) • Sand increases friction between car tyres and the road. ✓
• Salt makes ice melt. ✓

if more than two boxes are ticked, deduct a mark for each incorrect box
minimum of zero

2 (L4)

M6. (a) (i) filtration ✓

if more than one box is ticked, award no mark

1 (L3)

(ii) chromatography ✓

if more than one box is ticked, award no mark

1 (L3)

(b) (i) it is alkaline
accept ‘alkali’

1 (L3)

(ii) red

1 (L3)

(c) indicator ✓

if more than one box is ticked, award no mark

1 (L4)
M7. markers should read the answers to parts a and b before marking this question

parts a and b should be marked together

(a) • temperature of the water
  accept ‘temperature’
  accept ‘room temperature’
  do not accept responses that describe rates of heating. 1 (L7)

any one from

• rate of evaporation
  accept ‘the time for it to evaporate’
  answers must refer to both time taken and amount of water lost

• time taken for all the water to evaporate
  accept ‘measure how much water is left after a certain time’
  ‘time taken’ is insufficient

• volume or mass or amount of water lost in a fixed time 1 (L7)

any one from

• starting volume of water
  accept ‘the amount of water’
  accept a specified volume of water
  ‘same heater’ and ‘same starting measurement’ are insufficient

• shape of container

• same ambient conditions
  accept ‘room temperature’ if the independent variable is ‘water temperature’ 1 (L7)

(b) a column or row indicating temperature and a column or row indicating time or volume lost or volume remaining

accept a column or row indicating ‘rate of evaporation’
accept ‘amount lost’ or ‘amount remaining’
both headings are required for the mark
the units of measurement are not necessary for the mark
the second column or row should be consistent with the dependent variable identified in part a
ignore other columns in the table 1 (L7)

8(a) oil 1 (L4)

natural gas
1 (L4)

accept ‘gas’
answers may be in either order

(b) (i) any two from
answers may be in either order

- wind
- solar
- tidal
- biomass
- geothermal

2 (L4)

(ii) 

C E A B D

if all three letters are correct, award two marks
if one letter is correct, award one mark

9 (a)

- P off
- Q on
- R on

accept 1 for ‘on’ and ‘0’ for ‘off’
all three answers are required for the mark

1 (L3)

(b) any one from

- battery
  accept ‘batteries’
- cell
  accept ‘cells’

1 (L4)

(c)

on
off
off

on
off

on
off

All three answers are required for the mark.
if all three answers are correct, award two marks
if two answers are correct, award one mark
if more than one box is ticked for any circuit, award no credit
for that circuit

2 (L4)

10 (a) any two from

• same type of cardboard
  accept 'same cardboard or box'

• same width (of cardboard)

• same length (of cardboard)

• same thickness of cardboard pieces
  accept, for one mark, 'the same sized bridge'
  if not given with 'width' or 'length' or thickness
  accept 'equal-sized cardboard pieces'

• loaded in the centre

• same (height of) blocks
  accept 'same height at the start'
  'same height of bridge' is insufficient

• same distance between blocks

• measure in the same place
  accept 'leave masses on for the same amount of time'
  accept 'masses of the same shape or type'

2 (L5)

(b) (i) • bridge A: any number from 0.0 to 2.9
  bridge B: any number from 5.1 to 5.5
  both answers are required for the mark

1 (L5)

(ii) any one from

• it collapsed

• it broke

• it folded

• it reached the bench

1 (L5)

(c) (i) • bridge A ✓
  if more than one box is ticked, award no mark
  both the bridge and a reason are required for the mark

any one from

• it bends less (at 200 g)
accept ‘there is a bigger gap to the bench’
‘it is stronger’ is insufficient

• bridge B bends more
  accept ‘it is higher’
  accept ‘bridge A is 7.0 cm and bridge B is only 6.5 cm’
  ‘bridge A is 7.0 cm and bridge B is 6.5 cm’ is insufficient

1 (L6)

(ii) • bridge B ✓

if more than one box is ticked, award no mark
both the bridge and a reason are required for the mark

any one from

• it bends less (at 300 g)
  accept ‘there is a bigger gap to the bench’
  ‘it is stronger’ is insufficient
  accept ‘it is higher’
  accept ‘bridge B is 5.6 cm and bridge A is only 3.0 cm’
  ‘bridge A was 3.0 cm, bridge B was 5.6 cm’ is insufficient

• bridge A bends more
  accept ‘bridge A is about to break’
  ‘it is about to break’ is insufficient

1 (L6)

11 (a)

for all four numbers in the correct place, award two marks
for any two or three numbers in the correct place, award one mark

2 (L5)

(b) any one from

• 21st August
• 22nd August
• 23rd August

accept dates written in another format

1 (L5)

• 2017

1 (L5)