Name: Solutions

GCSE 9-1 Foundation
Practice Paper
Set A
Paper 1 - Non Calculator

Equipment
1. A black ink ball-point pen.
2. A pencil.
3. An eraser.
4. A ruler.
5. A pair of compasses.
6. A protractor.

Guidance
1. Read each question carefully.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Information
1. Time: 1 hour 30 minutes
2. The maximum mark for this paper is 80.
3. The marks for questions are shown in brackets
4. You may use tracing paper.

<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
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<tbody>
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</tbody>
</table>

© CORBETTMATHS 2018
1. (a) Change 0.9 kg into grams

\[ 900 \text{g} \]  
(1)

(b) Change 2840 metres into kilometres

\[ 2.84 \text{km} \]  
(1)

2. Work out \[ 30 - 9 \times 2 \]

\[ 20 - 18 = 12 \]  
(1)

3. Solve \[ 8 - x = 3 \]

\[ 8 - 5 = 3 \]

\[ x = 5 \]  
(1)

4. Below are seven cards, each with a number written on it.

\[ -3 \quad -4 \quad 6 \quad 2 \quad 4 \quad -7 \quad 1 \]

Choose two suitable cards to make the calculation correct.

\[ 6 \quad + \quad -4 \quad = \quad 2 \]  
(1)
5. A sequence of numbers starts at 15 and follows the rule "treble the last number and add 4"

```
15  49  151  457 ...
```

The number 4129 is in the sequence.

Calculate the number which comes immediately before 4129 in the sequence

\[
\begin{align*}
4129 - 4 &= 4125 \\
4125 ÷ 3 &= 1375 \\
\end{align*}
\]

(1)

6. Shown is a rectangle.

```
2x + 7
\[\text{rectangle}\]
\[\text{rectangle}\]
```

The perimeter of the rectangle is \(P\)

Find a formula for \(P\) in terms of \(x\)

\[
P = 2(x + 7) + x + 3 + 2x + 7 + x + 3
\]

\[
P = 6x + 20
\]

(3)
7.

(a) Write down the coordinates of the point B

$$(-2, -1)$$

(1)

ABCD is a rectangle.

(b) Plot the points C and D on the grid.

(1)

(c) On the grid, draw the line with equation $y = -3$

(1)
8. The area of a football pitch is 6,040 m². A hockey pitch is 91 metres long and 37 metres wide.

Work out how much larger the area of the football pitch is than the area of the hockey pitch.

\[
\begin{array}{c|c}
90 & 1 \\
\hline
30 & 2700 & 30 \\
7 & 1630 & 7 \\
\end{array}
\]

\[
\frac{3640}{3367} \quad 2673 \text{ m}^2
\]

9. Using \( 3068 \div 26 = 118 \)

Write down the answer to \( 3068 \div 52 \)

\[
118 \div 2 = \]

\[ 59 \]
10. The number of passengers on 10 buses was recorded. The stem and leaf diagram shows this information.

Key: $1|4$ means 14 passengers

\[
\begin{array}{c|c}
0 & 7 \ 9 \\
1 & 4 \ 5 \ 6 \ | \ 8 \ 8 \\
2 & 1 \ 3 \\
3 & 0 \\
\end{array}
\]

(a) Work out the median.

\[17\]

(1)

A bus is selected at random.

(b) What is the probability the bus has more than 20 passengers?

\[\frac{3}{10}\]

(1)
11. 465 fans want to go to a rugby match. 
Each bus holds 50 fans.

(a) Work out the number of buses needed.

\[
\begin{align*}
9 \text{ buses} &= 450 \text{ fans} \\
10 \text{ buses} &= 500 \text{ fans}
\end{align*}
\]

10

11 fans decide not to go to the match.

(b) How does this affect the number of buses needed?

\[
465 - 11 = 454, \text{ so it doesn't affect the number of buses as 9 still wouldn't be enough}
\]

12. 150 students visit a school canteen.

Some students have packed lunches. 
Some students have a cooked lunch.

56 out of the 89 students who have packed lunch are female. 
There are 72 boys.

Work out how many females have a cooked lunch.

\[
\begin{array}{|c|c|c|}
\hline
& \text{packed lunch} & \text{cooked lunch} \\
\hline
\text{Male} & & 72 \\
\hline
\text{Female} & 56 & 22 \\
\hline
\text{Total} & 89 & 78 \\
\hline
\end{array}
\]

\[
150 - 72 = 78 \\
78 - 56 = 22
\]

22

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13. The volume of a cube is 125 cm$^3$.

Work out the surface area of the cube.

Each side is 5 cm, since $5^3 = 125$

$S. A. = 6 \times 5^2 = 6 \times 25$

150 cm$^2$

(3)

14. \[ \frac{13}{16}, \frac{3}{4}, \frac{5}{8}, \frac{11}{16} \]

Write these fractions in order, starting with the smallest.

\[ \frac{3}{4} = \frac{12}{16} \]

\[ \frac{5}{8} = \frac{10}{16} \]

\[ \frac{5}{8} \quad \frac{11}{16} \quad \frac{3}{4} \quad \frac{13}{16} \]

smallest

largest

(3)
15. 1,935 people visit a library during one week. The ratio children : adults is 1 : 4. How many more adults than children visited the library?

\[
\begin{align*}
1 + 4 &= 5 \\
1935 \div 5 &= 387 \\
4 \times 387 &= 1548 \\
4 &= 1548 \\
387 &= 1161
\end{align*}
\]

\[
387
\]

\[
\frac{1943}{1935}
\]

\[
\frac{300}{4}
\]

\[
\frac{1200}{320}
\]

\[
\frac{1700}{28}
\]

\[
\frac{5148}{5148}
\]

1161

(3)

16. Candles normally cost £6 each.

Two websites have special offers:

- **Corbettmaths Candles**: Buy 3 get 1 free
- **Candles’ R’us**: 20% off

Laura wants to buy 30 candles. Which website should Laura use?

**Corbettmaths**: 4 cost 3 x £6 = £18
28 cost 18 x 7 = £126
2 more = £12
£138

**Candles’ R’us**: 30 x 6 = £180
20% = 18 x 2 = £36
180 - 36 = £144

She should use Corbettmaths (obviously!)

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17. Two bags, 1 and 2, each contain equal size counters.

Bag 1 contains a pink counter, yellow counter and white counter
Bag 2 contains counters labelled 1, 4, 5 and 7.

A counter is drawn at random from bag 1 and a counter is drawn at random from bag 2.

If the counter from bag 1 is pink, the number on the counter from bag 2 is increased by 1
If the counter from bag 1 is yellow, the number on the counter from bag 2 is decreased by 5
If the counter from bag 1 is white, the number is halved.

Find the probability of scoring a number below 3

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>4</th>
<th>5</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>Y</td>
<td>-4</td>
<td>-1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>P</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>W</td>
<td>0.5</td>
<td>2</td>
<td>2.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

\[
\frac{8}{12} = \frac{2}{3}
\]
18. A farmer keeps cows, pigs and sheep on his farm. The ratio of cows to pigs to sheep on the farm is 2:7:16. 

Work out the percentage of the animals that are sheep.

\[ \text{the fraction of sheep} = \frac{16}{25} = \frac{64}{100} \]

\[ 2 + 7 + 16 = 25 \]

\[ \text{64\%} \]

19. Donna uses this recipe for Chilli Con Carne.

**Serves 6 people**

- 1 kilogram of mince
- 400 grams of tomatoes
- 3 chillies
- 600 grams of kidney beans

Donna is going to use this recipe to make Chilli Con Carne for 15 people.

Work out how many grams of mince she needs.

\[ \frac{1}{2} \text{kg mince for 3 people} \times 5 \]

\[ 2\frac{1}{2} \text{kg for 15 people} \]

\[ 2500 \text{ g} \]
20. (a) Write five million in standard form.

\[ 5 \times 10^6 \] (1)

(b) A calculator displays a number in standard form.

\[ 8.1 \times 10^{-5} \]

Write the number as an ordinary number.

\[ 0.000081 \] (1)

21. Round 45.2807 to two significant figures

\[ 45 \] (1)
22. (a) Work out \( \frac{2}{9} \div \frac{3}{4} \)

\[ \frac{11}{9} \times \frac{4}{3} = \frac{44}{27} \]

(b) Write down the value of \( 6^0 \)

1

(c) Write down the value of \( 5^{-2} \)

\[ \frac{1}{25} \]

23. Write 120 as a product of its prime factors.
   Give your answer in index form.

\[ 2^3 \times 3 \times 5 \]
24. Rebecca is $x$ years old.
Mary is 8 years older than Rebecca.
Jill is three times older than Mary.
The sum of their ages is 67.

Work out Mary’s age.

\[
\begin{align*}
R &: x \\
M &: x + 8 \\
J &: 3x + 24 \\
\hline
5x + 32 &= 67
\end{align*}
\]

\[
\begin{align*}
5x &= 35 \\
x &= 7
\end{align*}
\]

Mary is $x + 8 = 15$

25.

EF and CD are parallel straight lines.
CE = DE
Angle $CED = 40^\circ$

Find the size of angle $CEF$
Give a reason for each stage of your working:

\[
\begin{align*}
\hat{ECD} &= \frac{180 - 40}{2} = 70^\circ \\
\text{(angles in a triangle add up to 180)}
\end{align*}
\]

\[
\begin{align*}
x &= 70^\circ \quad \text{(alternate angles are equal)}
\end{align*}
\]
Work out the shaded area.
Give your answer in terms of \( \pi \)

Large circle area: \( \pi \times 11^2 = 121 \pi \)

Small circle area: \( \pi \times 9^2 = 81 \pi \)

\[
\frac{40 \pi}{40 \pi} \quad \text{cm}^2
\]
Sally is raising money for charity for a fun run. The table below has been given to her from the website.

<table>
<thead>
<tr>
<th>Donation</th>
<th>Frequency</th>
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<tr>
<td>0 &lt; d ≤ 5</td>
<td>30</td>
</tr>
<tr>
<td>5 &lt; d ≤ 10</td>
<td>40</td>
</tr>
<tr>
<td>10 &lt; d ≤ 20</td>
<td>15</td>
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<tr>
<td>20 &lt; d ≤ 50</td>
<td>11</td>
</tr>
<tr>
<td>50 &lt; d ≤ 100</td>
<td>4</td>
</tr>
<tr>
<td>100</td>
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<table>
<thead>
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<th>midpoint</th>
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<tbody>
<tr>
<td>2.5</td>
<td>75</td>
</tr>
<tr>
<td>7.5</td>
<td>300</td>
</tr>
<tr>
<td>15</td>
<td>225</td>
</tr>
<tr>
<td>35</td>
<td>385</td>
</tr>
<tr>
<td>75</td>
<td>+300</td>
</tr>
<tr>
<td>1285</td>
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</table>

Sally says the average donation is £10. By calculating the estimated mean, decide if you agree with Sally.

\[ \frac{1285}{100} = £12.85 \]

No, Sally has underestimated. The mean donation was £12.85, which is greater than the £10.
28. Here is a rectangle

All measurements are in centimetres.

Work out the area of the rectangle

\[ 11x - 2 = x + 18 \]

10x = 20

\[ x = 2 \]

\[ \text{Area} = 20 \times 5 = 100 \text{ cm}^2 \]
Max is drawing the graph of \( y = x^2 + 2x - 6 \)

Write down one thing that is wrong with Max’s graph.

The point circled should be at \((2, 2)\) rather than \((1.5, 2)\)

or...

He has calculated the minimum point incorrectly as \((-1, -9)\), it should be \((-1, -7)\)
30. The population of an island has decreased by 40% over 50 years. The population in 2018 was 360.

Work out the population of the island in 1968.

Decreased by 40% means 60% left

\[ \therefore 360 = 60\% \text{ of original} \]

\[ 60 = 10\% \]

\[ \therefore 600 = 100\% \]

600

(3)