Long Division

Study Development Worksheet

## Questions

1. 350 ÷ 7
2. 144 ÷ 3
3. 305 ÷ 5
4. 66 ÷ 4
5. 896 ÷ 8
6. 30.75 ÷ 3
7. 3171 ÷ 7
8. 34 ÷ 3

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## Answers

1. 350 ÷ 7

Write the answer in the bus shelter format:

|  |  |  |  |
| --- | --- | --- | --- |
| 7 | 3 | 5 | 0 |

3 ÷ 7 = 0, remainder 3

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 |  |  |
| 7 | ~~3~~ | 35 | 0 |

35 ÷ 7 = 5, remainder 0

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 | 5 |  |
| 7 | ~~3~~ | ~~35~~ | 0 |

0 ÷ 7 = 0, remainder 0

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 | 5 | 0 |
| 7 | ~~3~~ | ~~35~~ | 0 |

 Therefore, 350 ÷ 7 = 0.

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1. 144 ÷ 3

|  |  |  |  |
| --- | --- | --- | --- |
| 3 | 1 | 4 | 4 |

1 ÷ 3 = 0, remainder 1

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 |  |  |
| 3 | ~~1~~ | 14 | 4 |

14 ÷ 3 = 4, remainder 2

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 | 4 |  |
| 3 | ~~1~~ | ~~14~~ | 24 |

24 ÷ 3 = 8, remainder 0

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 | 4 | 8 |
| 3 | ~~1~~ | ~~14~~ | ~~24~~ |

Therefore, 144 ÷ 3 = 48.

1. 305 ÷ 5

|  |  |  |  |
| --- | --- | --- | --- |
| 5 | 3 | 0 | 5 |

3 ÷ 5 = 0, remainder 3

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 |  |  |
| 5 | ~~3~~ | 30 | 5 |

30 ÷ 5 = 6, remainder 0

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 | 6 |  |
| 5 | ~~3~~ | ~~30~~ | 5 |

5 ÷ 5 = 1, remainder 0

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 | 6 | 1 |
| 5 | ~~3~~ | ~~30~~ | ~~5~~ |

 Therefore, 305 ÷ 5 = 61.

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1. 66 ÷ 4

|  |  |  |
| --- | --- | --- |
| 4 | 6 | 6 |

6 ÷ 4 = 1, remainder 2

|  |  |  |
| --- | --- | --- |
|  | 1 |  |
| 4 | ~~6~~ | 26 |

26 ÷ 4 = 6, remainder 2

|  |  |  |
| --- | --- | --- |
|  | 1 | 6 |
| 4 | ~~6~~ | 26 |

Therefore, one potential answer to this question is: 66 ÷ 4 = 16, remainder 2.

If we would like to find the decimal answer, we add .0 to the dividend:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 6 | . |  |
| 4 | ~~6~~ | 26 | . | 0 |

We then write in the remainder from earlier:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 6 | . |  |
| 4 | ~~6~~ | ~~26~~ | . | 20 |

20 ÷ 4 = 5, remainder 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 6 | . | 5 |
| 4 | ~~6~~ | ~~26~~ | . | 20 |

66 ÷ 4 = 16.5

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1. 896 ÷ 8

|  |  |  |  |
| --- | --- | --- | --- |
| 8 | 8 | 9 | 6 |

8 ÷ 8 = 1, remainder 0

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1 |  |  |
| 8 | ~~8~~ | 9 | 6 |

9 ÷ 8 = 1, remainder 1

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1 | 1 |  |
| 8 | ~~8~~ | ~~9~~ | 16 |

16 ÷ 8 = 2, remainder 0

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1 | 1 | 2 |
| 8 | ~~8~~ | ~~9~~ | ~~16~~ |

Therefore, 896 ÷ 8 = 112.

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1. 30.75 ÷ 3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 3 | 3 | 0 | . | 7 | 5 |

3 ÷ 3 = 1, remainder 0

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 |  | . |  |  |
| 3 | ~~3~~ | 0 | . | 7 | 5 |

0 ÷ 3 = 0, remainder 0

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 0 | . |  |  |
| 3 | ~~3~~ | ~~0~~ | . | 7 | 5 |

7 ÷ 3 = 2, remainder 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 0 | . | 2 |  |
| 3 | ~~3~~ | ~~0~~ | . | ~~7~~ | 15 |

15 ÷ 3 = 5, remainder 0

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 0 | . | 2 | 5 |
| 3 | ~~3~~ | ~~0~~ | . | ~~7~~ | ~~15~~ |

Therefore, 30.75 ÷ 3 = 10.25

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1. 3171 ÷ 7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 7 | 3 | 1 | 7 | 1 |

 3 ÷ 7 = 0, remainder 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 0 |  |  |  |
| 7 | ~~3~~ | 31 | 7 | 1 |

31 ÷ 7 = 4, remainder 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 0 | 4 |  |  |
| 7 | ~~3~~ | ~~31~~ | 37 | 1 |

37 ÷ 7 = 5, remainder 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 0 | 4 | 5 |  |
| 7 | ~~3~~ | ~~31~~ | ~~37~~ | 21 |

21 ÷ 7 = 3, remainder 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 0 | 4 | 5 | 3 |
| 7 | ~~3~~ | ~~31~~ | ~~37~~ | ~~21~~ |

Therefore 3171 ÷ 7 = 453.

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1. 34 ÷ 3

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 3 | 3 | 4 |

3 ÷ 3 = 1, remainder 0

|  |  |  |
| --- | --- | --- |
|  | 1 |  |
| 3 | ~~3~~ | 4 |

4 ÷ 3 = 1, remainder 1

|  |  |  |
| --- | --- | --- |
|  | 1 | 1 |
| 3 | ~~3~~ | 4 |

Therefore, one possible solution to this question is 34 ÷ 3 = 11, remainder 1.

If we want to find the decimal version, we write .0 next to the dividend:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 1 | . |  |
| 3 | ~~3~~ | 4 | . | 0 |

We then write in the remainder that we found previously:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 1 | . |  |
| 3 | ~~3~~ | ~~4~~ | . | 10 |

10 ÷ 3 = 3, remainder 1

We do not have remainder 0, so we add another 0 after the decimal point of the dividend:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 1 | . | 3 |  |
| 3 | ~~3~~ | ~~4~~ | . | ~~10~~ | 10 |

10 ÷ 3 = 3, remainder 1

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Again, we do not have remainder 0, so we add another 0:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 1 | . | 3 | 3 |  |
| 3 | ~~3~~ | ~~4~~ | . | ~~10~~ | ~~10~~ | 10 |

10 ÷ 3 = 3, remainder 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 1 | . | 3 | 3 | 3 |  |
| 3 | ~~3~~ | ~~4~~ | . | ~~10~~ | ~~10~~ | ~~10~~ | 10 |

Since we keep getting the same remainder, we know that we will have .3333…. up to infinite 3s after the decimal point. It would usually be sufficient to say ’34 ÷ 3 is approximately 11.333’, or we could say ’34 ÷ 3 = 11.$\dot{3}$.’

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