Name: Date:

BIDMAS challenges

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Remember sums with different operations are solved using B I D M A S.

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| --- | --- | --- |
| **B** = Brackets |  | **Do the sums in this order** |
| **I** = Indices |
| **D** = Divide |
| **M** = Multiply |
| **A** = Add |
| **S** = Subtract |

Here are four cards with numbers on. Jimmy uses all four cards to make a sum with an answer of 34. 4751His first sum is 75 – 41 = 34Using his knowledge of BODMAS, he then made the following sums: 4 + (7 – 1) × 5 = 34 5 × 7 – 1 4 × 7 +5 + 1 |

**Task one:** use at least three of the given numbers to make the following answers.

4

7

5

1

**1)**

|  |  |  |
| --- | --- | --- |
| (i) 52 = 57 - 4 - 1 | (ii) 78 =  | (iii) 44 = |
| (iv) 22 = | (v) 23 = | (vi) 29 = |

**2)**

3

5

9

2

|  |  |  |
| --- | --- | --- |
| (i) 54 = | (ii) 44 = | (iii) 24 = |
| (iv) 14 = | (v) 48 = | (vi) 53 = |

**3)**

4

7

5

1

|  |  |  |
| --- | --- | --- |
| (i) 22 = | (ii) 37 = | (iii) 77 = |
| (iv) 62 = | (v) 55 = | (vi) 48 = |

**4)**

1

9

7

6

|  |  |  |
| --- | --- | --- |
| (i) 26 = | (ii) 57 = | (iii) 67 = |
| (iv) 20 = | (v) 52 = | (vi) 53 = |

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| Here is an example where powers are used: 2954Use at least three of the given numbers to make 81.e.g. 81 = (5 + 4) × 9 *or* 81 = 92 *or* 81 = 33+ 31 |

**Task two:** use at least three of the given numbers to make the following answers.

**1)**

2

5

6

8

|  |  |  |
| --- | --- | --- |
| (i) 31 = | (ii) 44 = | (iii) 53 = |
| (iv) 121 = | (v) 23 = | (vi) 65 = |

**2)**

3

7

9

2

|  |  |  |
| --- | --- | --- |
| (i) 15 = | (ii) 72 = | (iii) 40 = |
| (iv) 25 = | (v) 102 = | (vi) 43 = |

**3)**

5

6

7

8

|  |  |  |
| --- | --- | --- |
| (i) 25 = | (ii) 4 = | (iii) 54 = |
| (iv) 32 = | (v) 18 = | (vi) 70 = |

**Extension:** using at leastthree of the numbers below write as many different sums as possible.

1

4

6

8

e.g. 16 + 8 = 24 *or*  $\sqrt{16}$ + 4 = 4 + 4 = 8 *or* 82 – 1 = 64 – 1 = 63

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BODMAS challenges – answers

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| **Task one** |
| **1.** | (i) 52 = 47 + 5 52 =(5 + 7 + 1) × 4 | (ii) 78 = 75 + 4 – 1 78 = 74 + 5 - 1 | (iii) 44 = 45 – 1 44 = 51 – 7 44 = 5 × (7 + 1) + 4 |
| (iv) 22 = 15 + 7 22 = 17 + 5 22 = (4 – 1) × 5 + 7 | (v) 23 = 4 × 7 – 5 23 = 4 × (5 – 1) + 7 | (vi) 29 = 4 × 7 + 1 29 = 4 × (7 – 1) + 5 |
| **2.** | (i) 54 = 59 – 3 – 2 54 = 5 × 9 + 32  | (ii) 44 = 35 + 9 44 = 5 × 9 + 2 – 3 44 = 29 + 3 × 5 | (iii) 24 = 29 – 5 24 = (3 + 9) × 2 24 = (9 – 5) × 3 × 2 |
| (iv) 14 = 23 - 9  14 = 29 – 3 × 5 | (v) 48 = 5 × 9 + 3 48 = 39 + 32  | (vi) 53 = 35 + 9 × 2 53 = 59 – 2 × 3 |
| **3.** | (i) 22 = 78 – 56 22 = 5 × 6 - 8  | (ii) 37 = 6 × 7 – 5 37 = 5 × 7 + 8 - 6  | (iii) 77 = 78 + 5 – 6 77= (5 + 6) × 7 |
| (iv) 62 = 67 – 5 62 = 7 × 8 + 6  | (v) 55 = 7 × 8 + 5 – 6 55 = 6 × 7 + 5 + 8 | (vi) 48 = 56 - 8 48 = 78 – 5 × 6 |
| **4.** | (i) 26 = 19 + 7 26 = 17 + 9 26 = (6 – 1) × 7 - 9 | (ii) 57 = 67 – 9 – 1 57 = (1 + 7) × 6 + 9 | (iii) 67 = 76 – 9 67 = (1 + 9) × 6 + 7 |
| (iv) 20 = 17 + 9 – 6 20 = (9 – 6) × 7 - 1 | (v) 52 = 69 – 17 52 = 7 × 6 + 9 + 1 | (vi) 53 = 9 × 6 – 1 53 = (9 + 1) × 6 - 7 |

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| **Task two** |
| **1.** | (i) 31 = 25 + 6 31 = 62 - 5 | (ii) 44 = 5 × 8 + 6 - 2 44 = 62 + 8 | (iii) 53 = 6 × 8 + 5 53 = 82 – 6 - 5 |
| (iv) 121 = (5 + 6)2  | (v) 65 = 68 – 5 + 2 65 = 82 + 6 - 5 | (vi) 23 = 25 + 6 - 8 23 = 85 – 62 23 = 52 – 8 + 6 |
| **2.** | (i) 15 = 9 × 2 – 3 15 = 7 + 9 – 2 + 3 15 = 23 + 7  | (ii) 72 = 23 × 9  72 = 7 × 9 + 32 | (iii) 40 = (9 + 2) × 3 + 7 40 = 72 - 9  |
| (iv) 25 = 9 × 2 + 7 25 = (3 + 2)2 | (v) 102 = 92 + 7 + 3 102 = 92 + 3 × 7 | (vi) 43 = 72 – 9 + 3 43 = (3 × 2)2 + 7 |
| **3.** | (i) 25 = 52 25 = (20 – 4)2 - 7  | (ii) 4 = 7 + 8 – 5 - 6 4 = (7 – 5)24 = (7 – 5) × (8 – 6) | (iii) 54 = 67 – 5 - 8 54 = 7(8 – 6) + 5 |
| (iv) 32 = (8 – 6)5 32 = 52 + 7  | (v) 18 = 5 + 6 + 7 18 = 52 - 7 | (vi) 70 = 67 + 8 - 5 70 = 82 + 6 |

**Extension:** there are many answers that can be obtained here. Below are just a few of them.

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| 1 + 4 + 6 = **11** | 68 – 41 = **27** | 14 × (8 – 6) = **28** | 82 – 1 = 64 – 1 = **63** |
| 1 + 6 + 8 = **15** | 46 + 18 = **64** | 18 ÷ (6 – 4) = **9** | $\sqrt{4}$ + 6 = 2 + 6 = **8** |
| 1 × 4 × 6 = **24** | 14 + 6 × 8 = **62** | 42 = **16** | $\sqrt{16}$ + 18 = 4 + 18 = **22** |
| 4 × 6 × 8 = **192** | 8 × 4 – 16 = **16** | (4 – 1)2 = 32 = **9** | $\sqrt{64}$ + 81 = 8 + 81 = **89** |