

Name:

Date:.....

BODMAS challenges

Remember sums with different operations are solved using B O D M A S.

B = Brackets
O = Others
D = Divide
M = Multiply
A = Add
S = Subtract



Do the sums in this order

Here are four cards with numbers on. Jimmy uses all four cards to make a sum with an answer of 34.



His first sum is $75 - 41 = 34$

Using his knowledge of BODMAS, he then made the following sums:

$$4 + (7 - 1) \times 5 = 34$$

$$5 \times 7 - 1$$

$$4 \times 7 + 5 + 1$$

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

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) $53 =$

Here is an example where powers are used:

2 9 5 4

Use at least three of the given numbers to make 81.

e.g. $81 = (5 + 4) \times 9$ or $81 = 9^2$ or $81 = 3^3 + 31$

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

Extension: using at least three of the numbers below write as many different sums as possible.

1	4	6	8
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e.g. $16 + 8 = 24$ or $\sqrt{16} + 4 = 4 + 4 = 8$ or $8^2 - 1 = 64 - 1 = 63$

BODMAS challenges – answers

Task one

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

Task two

- | | | |
|--|---|--|
| 1. (i) $31 = 25 + 6$
$31 = 6^2 - 5$ | (ii) $44 = 5 \times 8 + 6 - 2$
$44 = 6^2 + 8$ | (iii) $53 = 6 \times 8 + 5$
$53 = 8^2 - 6 - 5$ |
| (iv) $121 = (5 + 6)^2$ | (v) $65 = 68 - 5 + 2$
$65 = 8^2 + 6 - 5$ | (vi) $23 = 25 + 6 - 8$
$23 = 85 - 62$
$23 = 5^2 - 8 + 6$ |
| 2. (i) $15 = 9 \times 2 - 3$
$15 = 7 + 9 - 2 + 3$
$15 = 2^3 + 7$ | (ii) $72 = 2^3 \times 9$
$72 = 7 \times 9 + 3^2$ | (iii) $40 = (9 + 2) \times 3 + 7$
$40 = 7^2 - 9$ |
| (iv) $25 = 9 \times 2 + 7$
$25 = (3 + 2)^2$ | (v) $102 = 92 + 7 + 3$
$102 = 9^2 + 3 \times 7$ | (vi) $43 = 7^2 - 9 + 3$
$43 = (3 \times 2)^2 + 7$ |
| 3. (i) $25 = 5^2$
$25 = (20 - 4)^2 - 7$ | (ii) $4 = 7 + 8 - 5 - 6$
$4 = (7 - 5)^2$
$4 = (7 - 5) \times (8 - 6)$ | (iii) $54 = 67 - 5 - 8$
$54 = 7(8 - 6) + 5$ |
| (iv) $32 = (8 - 6)^5$
$32 = 5^2 + 7$ | (v) $18 = 5 + 6 + 7$
$18 = 5^2 - 7$ | (vi) $70 = 67 + 8 - 5$
$70 = 8^2 + 6$ |

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

$1 + 4 + 6 = 11$	$68 - 41 = 27$	$14 \times (8 - 6) = 28$	$8^2 - 1 = 64 - 1 = 63$
$1 + 6 + 8 = 15$	$46 + 18 = 64$	$18 \div (6 - 4) = 9$	$\sqrt{4} + 6 = 2 + 6 = 8$
$1 \times 4 \times 6 = 24$	$14 + 6 \times 8 = 62$	$4^2 = 16$	$\sqrt{16} + 18 = 4 + 18 = 22$
$4 \times 6 \times 8 = 192$	$8 \times 4 - 16 = 16$	$(4 - 1)^2 = 3^2 = 9$	$\sqrt{64} + 81 = 8 + 81 = 89$