

Calculate using the order of operations

- 1 Dexter and Ron are completing the same calculation.



$$6 + 4 \times 2 = 20$$

Dexter

$$6 + 4 \times 2 = 14$$



Ron

Who is correct? Ron

Explain your answer.

You need to multiply first so $6 + 4 \times 2 = 6 + 8 = 14$

2



$$8 - 3 + 4 = 8 - 7 = 1$$

Do you agree with Dora? No

Explain your answer.

Addition & subtraction are at equal priority so you work from left to right. $8 - 3 + 4 = 5 + 4 = 9$

3

Calculate these expressions without using a calculator.

Show how you used the order of operations. The first one has been done for you.

a) $6 + 8 \times 3 = 6 + 24 = 30$

b) $30 - 24 \div 2 = 30 - 12 = 18$

c) $50 + 36 \div 4 = 50 + 9 = 59$

d) $23 \times 2 - 1 = 46 - 1 = 45$

e) $60 \div 4 - 2 = 15 - 2 = 13$

f) $4 - 12 \div 3 = 4 - 4 = 0$

4

Is the statement true or false?

Both calculations give the same answer.

$$7 \times 3 + 5$$

$$7 \times (3 + 5)$$

Explain your answer.

False. $7 \times 3 + 5 = 21 + 5 = 26$

$7 \times (3 + 5) = 7 \times 8 = 56$

$26 \neq 56$

5

Work out the values of the expressions.

Show each step in your calculation.

a) $15 + 3 \times 2^2$
 $= 15 + 3 \times 4$
 $= 15 + 12$
 $= 27$

27

c) $3^3 - 21 \div 7$
 $= 27 - 21 \div 7$
 $= 27 - 3$
 $= 24$

24

b) $31 - 3^2 \times 2$
 $= 31 - 9 \times 2$
 $= 31 - 18$
 $= 13$

13

d) $45 + 2^3 \div 4$
 $= 45 + 8 \div 4$
 $= 45 + 2$
 $= 47$

47

- 6 Evaluate the expressions, showing each step in your calculation.

a) $150 - 3 \times 5^2 + 11$

$$= 150 - 3 \times 25 + 11$$

$$= 150 - 75 + 11$$

$$= 75 + 11$$

$$= 86$$

86

b) $150 - (3 \times 5^2 + 11)$

$$= 150 - (3 \times 25 + 11)$$

$$= 150 - (75 + 11)$$

$$= 150 - 86$$

$$= 64$$

64

c) $150 - 3 \times (5^2 + 11)$

$$= 150 - 3 \times (25 + 11)$$

$$= 150 - 3 \times 36$$

$$= 150 - 108$$

$$= 42$$

42

- 7 Aisha goes shopping with £20

She spends £4 on a book and buys 5 magazines each costing £3

Tick the calculations that show how much money she has left in pounds.

$20 - 4 + 5 \times 3$

$20 - (4 + 5) \times 3$

$20 - (4 + 5 \times 3)$

$20 - 4 - 5 \times 3$

$20 - 5 \times 3 + 4$

$20 - (5 \times 3 + 4)$

- 8 Calculate the values of the expressions.

$12 + 8 \div 4$

$$= 12 + 2$$

$(12 + 8) \div 4$

$$= 20 \div 4$$

14

5

$(12 + 4) \div 8$

$$= 16 \div 8$$

$12 + 4 \div 8$

$$= 12 + 0.5$$

2

12.5

- 9 Add brackets to make each statement correct.

You may need more than one set of brackets for some statements.

a) $3 + 4 \times 5 + 6 = 29$ $(3 + 4) \times 5 + 6 = 41$

$3 + 4 \times (5 + 6) = 47$ $(3 + 4) \times (5 + 6) = 77$

b) $(1 - 2 + 3) \times 4 = 8$ $1 - (2 + 3 \times 4) = -13$

- 10 Write $>$, $<$ or $=$ to complete the statements.

Show workings to justify your answers.

a) $3 + 4 \div 5$ $>$ $(3 + 4) \div 5$

b) $-3 - 2 \times 4$ $<$ $3 - (2 \times -4)$

c) $\frac{1}{2} + \frac{1}{3} \times \frac{1}{4}$ $>$ $(\frac{1}{2} - \frac{1}{3}) \times \frac{1}{4}$