1.8 Order of Operations and Calculator Methods: 2-hour Pack

Calculator allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Work out $\sqrt{49}$ + the cube root of 216.

(2)

2 Work out -9 x 3 + 8 x (-5).

(3)

3 Work out 4^3 x 3^2.

(2)

4 Work out (4 - (-8)) x 7.

(2)

5 Work out 7^3 x 2^2.

(2)

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6 Work out (1 - (-2)) x 4.

(2)

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7 Use a calculator to work out $(6.1 - 1.4)^2 + 1.6$.
Give your answer correct to 2 decimal places.

(2)

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8 Use a calculator to work out $(4.2 - 4.4)^2 + 8.5$.
Give your answer correct to 2 decimal places.

(2)

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9 Use a calculator to work out (4.9 + 1.7) ÷ (3.3 x 8.3).
Give your answer correct to 2 decimal places.

(2)

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10 Use a calculator to work out 7.7 x 5.5 - 6.8.
Give your answer correct to 2 decimal places.

(2)

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11 Work out $5^2 - 6^2$.

(2)

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12 Use a calculator to work out $(1.2 - 3.3)^2 + 2.9$.
Give your answer correct to 2 decimal places.

(2)

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13 Use a calculator to work out $(2.6 + 7.5) \div (5.8 \times 8)$.
Give your answer correct to 2 decimal places.

(2)

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14 Work out $8^2 + 4 \times 6$.

(3)

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15 Work out $\sqrt{225}$ + the cube root of 64.

(2)

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16 Use a calculator to work out 8.4 x 6.5 - 5.7.
Give your answer correct to 2 decimal places.

(2)

---

17 Work out (-3 - (-3)) x 5.

(2)

---

18 Work out $3^2 + 4^4$.

(2)

---

19 Work out 7 x 3 - 8 x 3.

(3)

---

20 Use a calculator to work out (1.6 + 3.4) ÷ (1.4 x 4.2).
Give your answer correct to 2 decimal places.

(2)

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21 Use a calculator to work out 4.3 x 2.5 - 5.7.
Give your answer correct to 2 decimal places.

(2)

---

22 Work out $5^2 \times 6^2$.

(2)

---

23 Work out $9^2 - 3^2$.

(2)

---

24 Use a calculator to work out 7.3 x 1.1 - 5.3.
Give your answer correct to 2 decimal places.

(2)

---

25 Work out $9^2 + 2 \times 3$.

(3)

---

26 Work out $\sqrt{225}$ + the cube root of 27.

(2)

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27 Work out $5^3 - 6^2$.

(2)

---

28 Use a calculator to work out $(4.4 - 4.8)^2 + 7.1$.
Give your answer correct to 2 decimal places.

(2)

---

29 Work out $9^2 - 6^2$.

(2)

---

30 Work out $3^2 \times 3^4$.

(2)

---

31 Work out $\sqrt{144}$ + the cube root of 8.

(2)

---

32 Use order of operations to simplify: $2^3 + 4 \times (3 + 1)$.

(2)

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33 Use a calculator to work out (7 + 1.4) ÷ (7 x 8).
Give your answer correct to 2 decimal places.

(2)

---

34 Work out 9 + 2 x 5.

(1)

---

35 Work out and show your working: (18 - 3) / 3 + 2^2.

(2)

---

36 Work out 30 / (2 x 3).

(1)

---

37 Work out 5^2 + 1.

(1)

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38 Work out and show all steps: $(4 + 2)^2$ - 3 x (7 - 4).

(3)

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39 A recipe requires 2^3 grams of salt and 3 x (5 + 2) grams of sugar. What is the total mass of salt and sugar, in grams? Show your working.

(3)

---

40 Work out 20 - 6 / 2.

(1)

---

41 Stretch: Work out and show all steps: $(2 \times 5)^2$ / (9 - 4) + 3.

(3)

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42 Work out 4^2 - 3.

(1)

---

43 Work out 15 / (2 + 3).

(1)

---

44 Work out 6 + 3 x (8 - 5).

(2)

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45 Work out $(5 + 3)^2 / 4$.

(2)

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46 Work out $2^3 + 5 \times (7 - 4)$.

(2)

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Mark scheme · 1.8 Order of Operations and Calculator Methods: 2-hour Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

7 or 6 found	M1
13 cao	A1

Answer: **13**

Question 2

-9 x 3 = -27 evaluated	M1
8 x (-5) = -40 evaluated	M1
-67 cao	A1

Answer: **-67**

Question 3

$4^3 = 64$ or $3^2 = 9$ found	M1
576 cao	A1

Answer: **576**

Question 4

4 - (-8) = 12	M1
84 cao	A1

Answer: **84**

Question 5

$7^3 = 343$ or $2^2 = 4$ found	M1
1372 cao	A1

Answer: **1372**

Question 6

1 - (-2) = 3	M1
12 cao	A1

Answer: **12**

Question 7

correct use of brackets and order of operations (method shown or unrounded value seen)	M1
23.69 cao	A1

Answer: **23.69**

Question 8

correct use of brackets and order of operations (method shown or unrounded value seen)	M1
8.54 cao	A1

Answer: **8.54**

Question 9

correct use of brackets and order of operations (method shown or unrounded value seen)	M1
0.24 cao	A1

Answer: **0.24**

Question 10

correct use of brackets and order of operations (method shown or unrounded value seen)	M1
35.55 cao	A1

Answer: **35.55**

Question 11

$5^2 = 25$ or $6^2 = 36$ found	M1
-11 cao	A1

Answer: **-11**

Question 12

correct use of brackets and order of operations (method shown or unrounded value seen)	M1
7.31 cao	A1

Answer: **7.31**

Question 13

correct use of brackets and order of operations (method shown or unrounded value seen)	M1
0.22 cao	A1

Answer: **0.22**

Question 14

correct first operation applied by the order of operations (brackets, indices, then x and ÷)	M1
second correct stage of working	M1
88 cao	A1

Answer: **88**

Question 15

15 or 4 found	M1
19 cao	A1

Answer: **19**

Question 16

correct use of brackets and order of operations (method shown or unrounded value seen)	M1
48.90 cao	A1

Answer: **48.90**

Question 17

-3 - (-3) = 0	M1
0 cao	A1

Answer: **0**

Question 18

$3^2 = 9$ or $4^4 = 256$ found	M1
265 cao	A1

Answer: **265**

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Question 19

correct first operation applied by the order of operations (brackets, indices, then x and ÷) **M1**

second correct stage of working **M1**

-3 cao **A1**

Answer: **-3**

Question 20

correct use of brackets and order of operations (method shown or unrounded value seen) **M1**

0.85 cao **A1**

Answer: **0.85**

Question 21

correct use of brackets and order of operations (method shown or unrounded value seen) **M1**

5.05 cao **A1**

Answer: **5.05**

Question 22

$5^2 = 25$ or $6^2 = 36$ found **M1**

900 cao **A1**

Answer: **900**

Question 23

$9^2 = 81$ or $3^2 = 9$ found **M1**

72 cao **A1**

Answer: **72**

Question 24

correct use of brackets and order of operations (method shown or unrounded value seen) **M1**

2.73 cao **A1**

Answer: **2.73**

Question 25

correct first operation applied by the order of operations (brackets, indices, then x and ÷) **M1**

second correct stage of working **M1**

87 cao **A1**

Answer: **87**

Question 26

15 or 3 found **M1**

18 cao **A1**

Answer: **18**

Question 27

$5^3 = 125$ or $6^2 = 36$ found **M1**

89 cao **A1**

Answer: **89**

Question 28

correct use of brackets and order of operations (method shown or unrounded value seen) **M1**

7.26 cao **A1**

Answer: **7.26**

Question 29

$9^2 = 81$ or $6^2 = 36$ found **M1**

45 cao **A1**

Answer: **45**

Question 30

$3^2 = 9$ or $3^4 = 81$ found **M1**

729 cao **A1**

Answer: **729**

Question 31

12 or 2 found **M1**

14 cao **A1**

Answer: **14**

Question 32

method: $2^3 = 8$ and (3+1)=4 or 4x4=16 **M1**

24 cao **A1**

Answer: **24**

Question 33

correct use of brackets and order of operations (method shown or unrounded value seen) **M1**

0.15 cao **A1**

Answer: **0.15**

Question 34

19 cao **B1**

Answer: **19**

Question 35

correctly evaluates the bracket and the power, 18-3 = 15 and $2^2 = 4$ **M1**

9 cao **A1**

Answer: **9**

Question 36

5 cao **B1**

Answer: **5**

Question 37

26 cao **B1**

Answer: **26**

Question 38

correctly evaluates both brackets, 4+2 = 6 and 7-4 = 3 **M1**

correctly evaluates the power and the multiplication, $6^2 = 36$ and 3 x 3 = 9 **M1**

27 cao **A1**

Answer: **27**

Question 39

correctly evaluates the power, $2^3 = 8$ **M1**

correctly evaluates the bracket and multiplication, 3 x (5+2) = 21 **M1**

29 grams cao **A1**

Answer: **29 grams**

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Question 40

17 cao	**B1**

Answer: **17**

Question 41

correctly evaluates both brackets, 2 x 5 = 10 and 9-4 = 5	**M1**
correctly evaluates the power and the division, 10^2 = 100 and 100/5 = 20	**M1**
23 cao	**A1**

Answer: **23**

Question 42

13 cao	**B1**

Answer: **13**

Question 43

3 cao	**B1**

Answer: **3**

Question 44

correctly evaluates the bracket and multiplication, 3 x (8-5) = 9	**M1**
15 cao	**A1**

Answer: **15**

Question 45

correctly evaluates the bracket and the power, $(5+3)^2$ = 64	**M1**
16 cao	**A1**

Answer: **16**

Question 46

correctly evaluates the power and the bracket, 2^3 = 8 and 7-4 = 3	**M1**
23 cao	**A1**

Answer: **23**

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