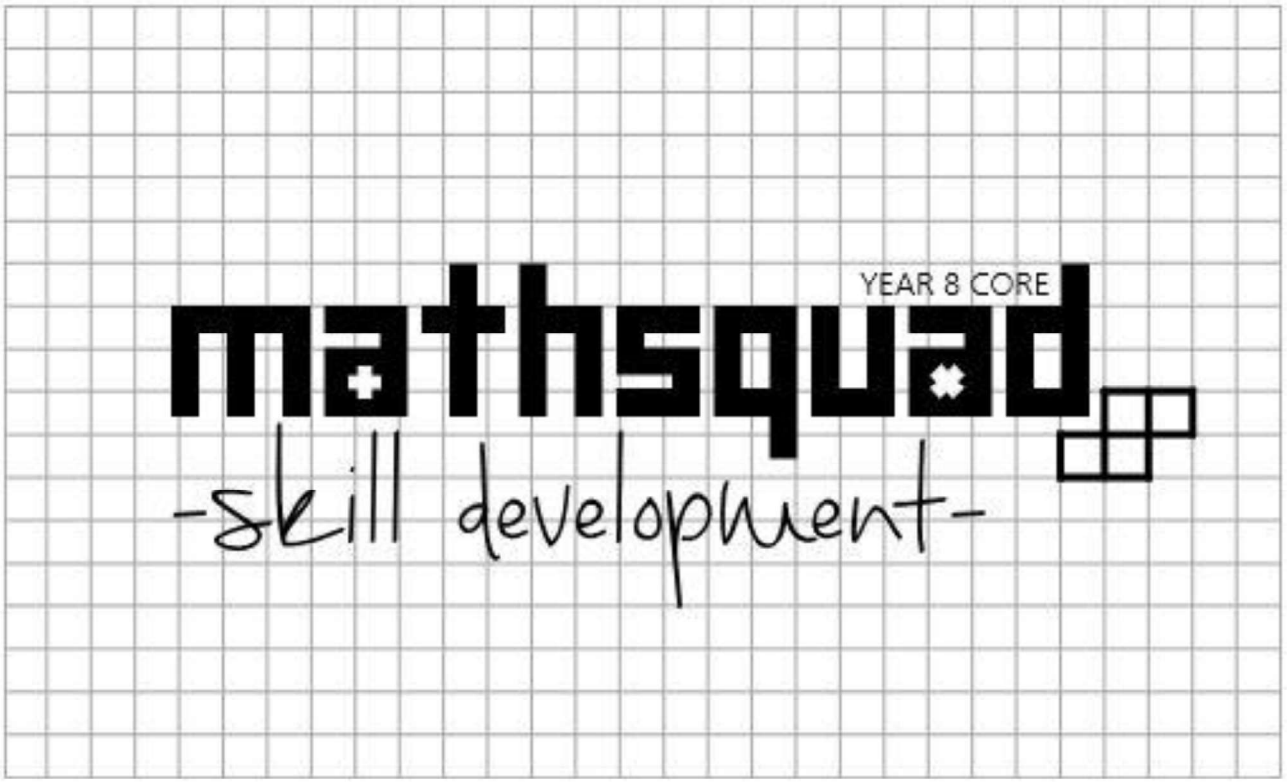

YEAR 8 CORE
mathsquad
-skill development-

Contents

c01a order of operations

C01a.1 Calculate the following. The expected detail in your working is demonstrated in the examples on the right.

a. $6 \times (3 + 2)$ b. $\frac{35-5}{10}$ c. $5 + 4 \times 4$ d. $20 \div 2 \times 5$

e. $5 \times (4 + 5)$ f. $8 \times (5 + 3)$ g. $(5 + 3) \times 6$ h. $8 \times (1 + 7)$

i. $\frac{12}{3} + 9$ j. $4 \times 6 - 4$ k. $\frac{23+5}{7}$ l. $21 - 6 \times 2$

m. $16 - \frac{24}{6}$ n. $2 \times (3 + 5)$ o. $32 - 2 + 8$ p. $12 \div 3 \times 4$

q. $2 \times 6 + 7$ r. $2 \times 3 + 9$ s. $\frac{3+9}{12}$ t. $16 - \frac{16}{2}$

Answers

a. 30 b. 3 c. 21 d. 50 e. 45 f. 64 g. 48 h. 64 i. 13 j. 20 k. 4 l. 9 m. 12 n. 16 o. 38 p. 16 q. 19 r. 15 s. 1 t. 8

Helpful Information

A mathematical **operation** combines two values in some way. Examples of mathematical operations are addition, subtraction, multiplication and division.

The **order of operations** is the order which operations must be completed when more than one operation is present.

GEMA is a helpful acronym that reminds us the set order of operations.
The order of operations is as follows:

G – Groupings (eg. brackets, operations together within a fraction)
E – Exponents (or powers)
M – Multiplication and Division (from left to right)
A – Addition and subtraction (from left to right)

Examples

Question: $6 \times (3 + 2)$
Thought process:
Look for groupings first.
The addition is grouped in a bracket so must be done first.
Since only one operation is present we just complete the multiplication.

$$\begin{aligned} & 6 \times (3 + 2) \\ = \ & 6 \times 5 \\ = \ & 30 \end{aligned}$$

Answer: 30

Question: $\frac{35-5}{10}$
Thought process:
Look for groupings first.
The subtraction is grouped in the numerator so must be done first.
Since only one operation is present we just complete the division.

$$\begin{aligned} & \frac{35-5}{10} \\ = \ & \frac{30}{10} \\ = \ & 3 \end{aligned}$$

Answer: 3

C01b order of operations involving roots and powers

Questions

C01b.1 Calculate the following. The expected detail in your working is demonstrated in the examples on the right.

a. 4×2^3 b. $\sqrt{38+43}$ c. $\frac{2}{5}(12+38)$ d. $(7+5)^2$

e. $\sqrt{24-15}$ f. $\frac{5}{7}(8+55)$ g. $\sqrt{103-22}$ h. $\frac{4}{7}(13+8)$

i. $65-7^2$ j. $\sqrt{7+9}$ k. $(10-2)^2$ l. $(8+1)^2$

m. $\frac{3^2}{3}$ n. $\frac{7}{8}(87-23)$ o. $(8-4)^2$ p. $(10-6)^2$

q. $(4-1)^2$ r. $(11-9)^3$ s. $\frac{6^2}{3}$ t. $6+7^2$

Answers

a. 32 b. 9 c. 20 d. 144 e. 3 f. 45 g. 9 h. 12 i. 16 j. 4 k. 64 l. 81 m. 3 n. 56 o. 16 p. 16 q. 9 r. 8 s. 12 t. 55

Helpful Information

G – Groupings (eg. brackets, operations together within a fraction)
E – Exponents (or powers)
M – Multiplication and Division (from left to right)
A – Addition and subtraction (from left to right)

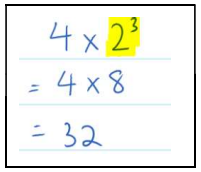
Examples

Question: 4×2^3

Thought process:

Look for groupings, there are none. Look for exponents. There is a power so that must be done first.

Since only one operation is present we just complete the multiplication.



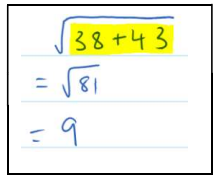
Answer: 32

Question: $\sqrt{38+43}$

Thought process:

Look for groupings first. The sum is grouped under the square root sign so must be done first.

Since only one operation is present we just calculate the square root.



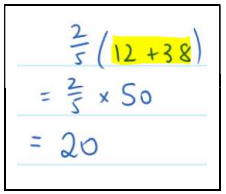
Answer: 9

Question: $\frac{2}{5}(12+38)$

Thought process:

Look for groupings first. The addition is grouped within the brackets so must be done first.

Since only one operation is present we just calculate two-fifths of 50.



Answer: 20

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