GCSE Maths: Substituting into expressions (Higher): worksheet

GCSE Maths - Substitution and Formulae - Higher - Lesson 8.2

Name: _____ Date: _____ Score: _____

16 questions. Write your answers in the spaces. Answers and step-by-step help are free at **websink.site/gcse/maths/ch08-substitution-formulae/higher/substituting-into-expressions/**

Exercise 8B Substituting into expressions Non-calculator

1 Work out the value of each expression when $x = 4$.

(a) $3x$

Answer:

(b) $x + 7$

Answer:

(c) $10 - x$

Answer:

(d) $\frac{x}{2}$

Answer:

(e) $5x - 3$

Answer:

(f) $2x + 9$

Answer:

2 Work out the value of each expression when $a = 3$ and $b = 5$.

(a) $a + b$

Answer:

(b) ab

Answer:

(c) $2a + b$

Answer:

(d) $3b - a$

Answer:

(e) $ab + 4$

Answer:

(f) $4a - 2b + 1$

Answer:

3 Work out the value of each expression when $p = 2$ and $q = 10$.

(a) $\frac{q}{p}$

Answer:

(b) pq

Answer:

(c) $q - p$

Answer:

(d) $3p + q$

Answer:

(e) $2q - 5p$

Answer:

4 Work out the value of each expression when $x = 3$.

(a) x^2

Answer:

(b) $2x^2$

Answer:

(c) $x^2 + 1$

Answer:

(d) x^3

Answer:

(e) $5x^2 - x$

Answer:

(f) $10 - x^2$

Answer:

5 Work out the value of each expression when $n = 5$.

(a) $2(n + 3)$

Answer:

(b) $3(n - 1)$

Answer:

(c) $4(2n - 3)$

Answer:

(d) $(n - 2)^2$

Answer:

(e) $(n + 2)(n - 1)$

Answer:

6 Work out the value of each expression when $x = 8$ and $y = 4$.

(a) $\frac{x + y}{3}$

Answer:

(b) $\frac{x}{y}$

Answer:

(c) $\frac{3x}{y}$

Answer:

(d) $\frac{x + 4}{y - 2}$

Answer:

(e) $\frac{x^2}{y}$

Answer:

7 Tia is asked to work out $5x$ when $x = 3$. She writes "$5x = 53$". Explain her mistake and write the correct value.

Answer:

8 A gym charges a joining fee of £12 plus £8 for each class. The cost in pounds of n classes is $C = 8n + 12$. Work out the cost of:

(a) 3 classes

Answer:

(b) 6 classes

Answer:

(c) 10 classes

Answer:

9 Complete this table of values for the expression $4x - 3$. Work out the value for each x.

(a) $x = 1$

Answer:

(b) $x = 2$

Answer:

(c) $x = 3$

Answer:

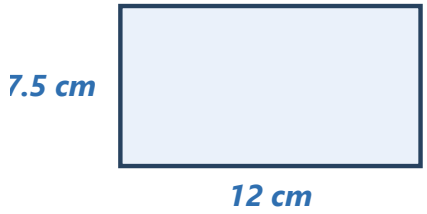
(d) $x = 4$

Answer:

(e) $x = 5$

Answer:

10 A rectangle has length $l = 12$ cm and width $w = 7.5$ cm. Use the formulae to work out



(a) the perimeter, $P = 2(l + w)$

Answer:

(b) the area, $A = lw$

Answer:

11 **Work out the value of each expression.**

(a) $\sqrt{x}$ when $x = 49$

Answer:

(b) $\sqrt{2x + 1}$ when $x = 12$

Answer:

(c) $\sqrt{x^2 + y^2}$ when $x = 5$, $y = 12$

Answer:

12 **The cost in pounds to hire a bike for h hours is $C = 5h + 3$. Sam hires a bike for 4 hours and Dev hires one for 7 hours.**

(a) How much does Sam pay?

Answer:

(b) How much does Dev pay?

Answer:

(c) How much more does Dev pay than Sam?

Answer:

13 **(a) Work out $2x$ and x^2 when $x = 1, 2, 3$ and 4. (b) For which of these values of x are $2x$ and x^2 equal? (c) Is $2x$ always bigger than x^2 after that value? Use your results to explain.**

Answer:

14 **The expression $4n + 1$ is worked out for $n = 4$, $n = 5$ and $n = 6$. Which value of n gives 25?**

Answer:

15 **Work out the value of $\frac{x^2 - y^2}{x - y}$ when $x = 7$ and $y = 3$. Then work out $x + y$. What do you notice?**

Answer:

16 **x and y are whole numbers with $x + y = 9$ and $xy = 20$. Work out the value of $x^2 + y^2$.**

Answer:

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