Factoring, Rational Expressions and Solving Review

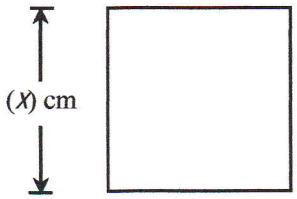
1

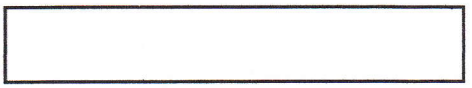
If $x \neq 4$, what binomial represents the simplified form of the expression $\dfrac{(x-1)^2 - 9}{x-4}$?

2

The square and the rectangle have the same area. Each side of the square measures (x) cm. The area of the rectangle is $(2x^2 - 7x - 30)$ cm^2.

What is the perimeter of the rectangle?





Area: $(2x^2 - 7x - 30)$ cm^2

3

The divisor in the following operation is not equal to zero.

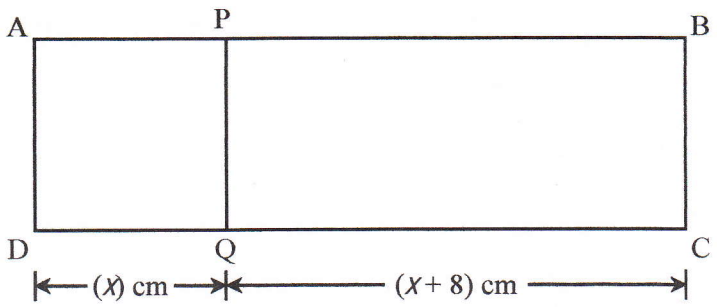
$$(2x^2 - 5x - 12) \div (x - 4)$$

What is the result of this operation in simplified form?

4

In the figure, line segment PQ divides rectangle ABCD into the following two quadrilaterals: square APQD and rectangle PBCQ. The area of rectangle ABCD is 120 cm^2. In addition, m $\overline{DQ} = (x)$ cm and m $\overline{QC} = (x + 8)$ cm.

What is the numerical area of rectangle PBCQ?



5

In the algebraic expression given below, the denominators are not equal to zero.

$$\frac{x+5}{x^2 - 16} + \frac{3}{x-4}$$

Which of the following expressions is equivalent to the above expression?

A) $\dfrac{4x - 7}{x^2 - 16}$

B) $\dfrac{4x + 17}{x^2 - 16}$

C) $\dfrac{3x^2 - 48}{x^2 + x - 20}$

D) $\dfrac{x + 8}{x^2 + x - 20}$

6

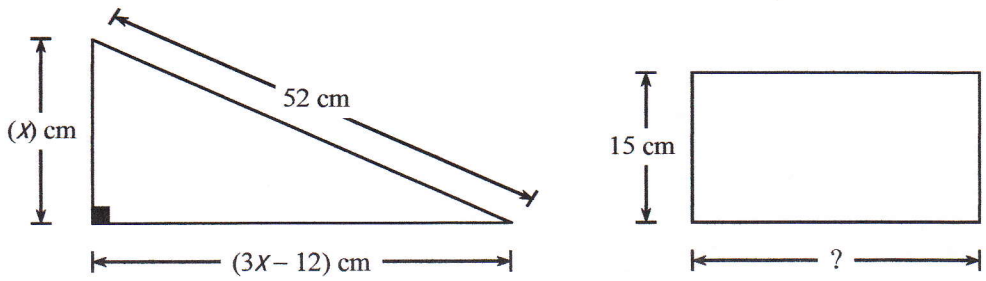
If $c \neq -3$, what polynomial is the result of the following operation?

$$(2c^3 + c^2 - 14c + 3) \div (c + 3)$$

7 The right triangle and the rectangle given below have the same area.

The hypotenuse of the triangle measures 52 cm. The sides of the right angle of the triangle measure (x) cm and ($3x - 12$) cm respectively.

The height of the rectangle is 15 cm.



What is the numerical length of the base of the rectangle?

8 In the following algebraic expression, the denominator is not equal to zero.

$$\frac{a^3b + 4a^2b - ab - 4b}{a^2 - 1}$$

This expression is equivalent to a product of two factors: a monomial and a binomial. The monomial is b.

What is the binomial?

9 In the following algebraic expression, the denominator is not equal to zero.

$$\frac{6ab - 15a + 12b - 30}{6b - 15}$$

What binomial is equivalent to this expression?

10 What is the result of the following operation?

$$(6x^3y^3 - 11x^2y^2 + 18xy - 5) \div (3xy - 1)$$

11 The length of the sides of rectangle ABCD below can be represented by binomials.

The area of this rectangle is then represented by the trinomial $5x^2 + 38x - 63$.

In addition, the length of diagonal AC of this rectangle is 52 cm.

What is the numerical perimeter of rectangle ABCD in centimetres?