Department of knowledge and Education

Sweihan School

Mathematics – Grade 9

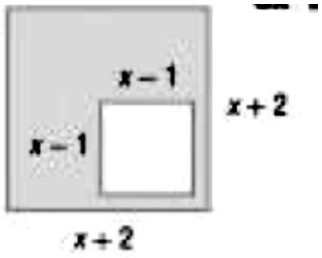
Q1) Find each product

a) $(a+10)(a+10) =$

b) $(u - 3)(u + 3) =$

c) $(h + 7)^2 =$

Q2) Find the area of the shaded region.



Q3) Use the distributive property to factor each polynomial.

a) $21\,b - 15\,a =$

b) $14\,c^2 + 2\,c =$

c) $9\,fg - 45\,f - 7\,g + 35 =$

Q4) Solve each equation. Check your answer.

a) $3k(k + 10) = 0$

b) $(4m + 2)(3m - 9) = 0$

c) $r^2 = 14\,r$

Q5) Factor each polynomial.

a) $x^2 + 17x + 42 =$

b) $n^2 - 2\,n - 35 =$

c) $a^2 + 8a - 48 =$

Q6) Solve each equation. Check your solution.

a) $x^2 - 7x + 12 = 0$

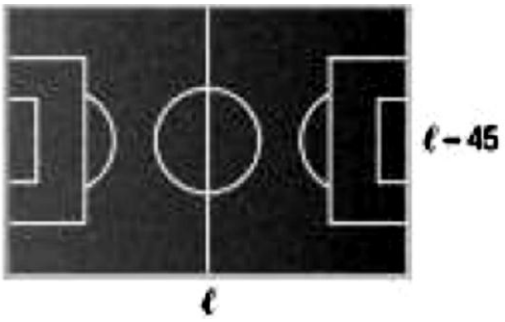
b) $c^2 + 10c + 9 = 0$

c) $y^2 - 90 = 13y$

Q7) **FOOTBALL** The width of a high school football field is 41.2 meters shorter than its length.

a. Define a variable, and write an expression for the area of the field.

b. The area of the field is 7525.2 square meters.



a)

b)

Q8) Factor each polynomial

a) $3x^2+17x+10$

b) $5x^2+13x+6$

c) $6n^2+22n-8$

d) $2n^2-n-1$

Q9) Solve each equation

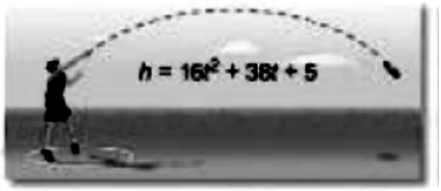
a) $2x^2 + 9x - 18 = 0$

b) $4x^2 + 17x + 15 = 0$

c) $-3x^2 + 5x + 2 = 0$

d) $2x^2 - 17x + 30 = 0$

Q10) **MODELING** Khalid throws the discus at a school meet.



a. What is the initial height of the discus?

b. After how many seconds does the discus hit the ground?

Q11) Factor each polynomial

a) $q^2 - 121$

b) $r^2 - 9\,t^2$

c) $h^3 - 100\,h$

d) $5\,a^3 - 20\,a$

e) $3\,x\,n^4 - 27\,x^3$

f) $3x^3 + x^2 - 75x - 25$

Q12) Solve each equation.

a) $36w^2 - 121 = 0$

b) $100 = 25\,x^2$

c) $64\,x^2 - 1 = 0$

d) $4\,a^2 = \frac{9}{64}$

Q13) Determine whether each trinomial is a perfect square trinomial. Write yes or no.

a) $x^2 + 6x + 9$

b) $81x^2 - 90x + 25$

c) $6x^2 + 30x + 36$

d) $4x^2 + 9x + 16$

Q14) Factor each polynomial, if possible or write "prime" if it's not possible.

a) $24d^2 + 39d - 18$

b) $8y^2 - 200z^2$

c) $12m^3 - 22m^2 - 70m$

d) $b^2 + 6b - 12$

Q15) **GEOMETRY** **The volume of a rectangular prism is represented by the expression $8y^3 + 40y^2 + 50y$. Find the possible dimensions of the prism if the dimensions are represented by polynomials with integer coefficients.**

Q16) Solve each equation

a) $4x^2 = 80x - 400$

b) $(y - 4)^2 = 7$

Q17) State the number and type of roots for each equation.

a) $x^2 - 3x - 10 = 0$

b) $x^3 - 8 = 0$

c) $16x^4 - 81 = 0$

d) $x^5 + 2x^3 + x = 0$

Q18) State the possible number of positive real zeros, negative real zeros and imaginary zeros of each function.

a) $f(x) = x^3 + 9x^2 + 6x - 16$

b) $f(x) = 4x^6 - 5\,x^4 - x^2 + 24$

Q19) Write a polynomial function of at least degree with integral coefficients that have the given zeros.

a) 5 , -1 , -2

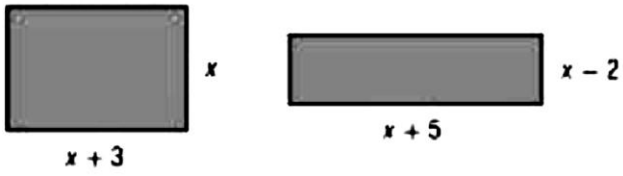
b) 2 , 3i

Q1) Find each sum or difference

a) $(x + 5) + (x^2 - 3x + 7)$

b) $(7m - 8n^2 + 3n) - (-2n^2 + 4m - 3n)$

Q2) **MULTIPLE CHOICE** Abeer is carpeting two of the rooms in her house. The dimensions are shown. Which expression represents the total area to be carpeted?



A $x^2 + 3x$

B $2x^2 + 6x - 10$

C $x^2 + 3x - 5$

D $8x + 12$

Q3) Find the product.

a) $a(a^2 + 2a - 10)$

b) $(2a - 5)(3a + 5)$

c) $(x + 3)^2$

d) $(2b - 5)(2b + 5)$

Q4) **MULTIPLE CHOICE** The area of the rectangle shown below is $2x^2 - x - 15$ square units. What is the width of the rectangle?

F $x - 5$

G $x + 3$

H $x - 3$

J $2x - 3$

Q5) Solve each equation

a) $5(t^2 - 3t + 2) = t(5t - 2)$

b) $y (y - 4) = 0$

c) $x^2 + 7x + 6 = 0$

d) $4x^2 - 81 = 0$

Q6) Factor each polynomial

a) $5xy - 10y$

b) $7ab + 14ab^2 + 21a^2b$

c) $15x^2 + 7x - 2$

d) $16x^2 + 40x + 25$

Q7) **MULTIPLE CHOICE** Which choice is a factor of $x^4 - 1$ when it is factored completely?

F $x^2 - 1$ **H** x

G $x - 1$ **J** 1

Q1) Simplify each expression

a) $(x^2)(7x^8)$

b) $(5a^7bc^2)(-6a^2bc^5)$

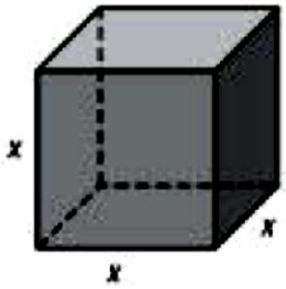
Q2) ***Multiple choice*** Express the volume of the solid as a monomial.

A x^3

B $6x$

C $6x^3$

D x^6



Q3) Simplify each expression. Asume that no denominator equal 0.

a) $\frac{x^6y^8}{x^2} =$

b) $(\frac{2a^4b^3}{c^3})^0 =$

Q4) Simplify

a) $\sqrt[3]{1000} =$

b) $27^{\frac{2}{3}} =$

c) $10{,}000^{\frac{3}{4}} =$

d) $(\frac{1}{121})^{3/2} =$

Q5) Solve each equation

a) $12^x = 1728$

b) $7^{x-1} = 2401$

Q6) Epress each number in scientific notation.

a) 58,000 =

b) 0.00021=

Q7) Express each number in standard form.

a) $2.9 \times 10^{-5} =$

b) $9.1 \times 10^{6} =$

Q8) Evaluate each product or quotient. Express in scientific notation.

a) $(2.5 \times 10^3)(3 \times 10^4) =$

b) $\frac{8.8 \times 10^2}{4 \times 10^{-4}} =$

Q9) Graph the function $y = 2(5)^x$.
Find the y-intercept, and state the domain and range.