Math 10 Foundations LG 4/5 Quiz A Answer Sheet

Instructions

1. **Mark your quiz.**
2. **Complete the "How Did I Do?" sheet.**
3. **Return this sheet to Mrs. Craig.**
4. **Bring your marked quiz and the "How Did I Do?" page to your teacher for a quick interview.**

Foundations of Math 10 LG 4/5 Ver A /20

Expectation #1: Determine prime factors, greatest common factors, and least common multiples of whole numbers.

1. Determine the Greatest Common Factor (GCF) of the following: 18, 30, & 54. (1 mark)

18 → 2 × 9, 9 → 3 × 3

30 → 2 × 15, 15 → 3 × 5

54 → 2 × 27, 27 → 3 × 9, 9 → 3 × 3

→ ANS. 6

→ GCF = 2 × 3 (Common Factor)

2. Identify the Least Common Multiple (LCM) of the following: 6 and 8. (1 mark)

6 → 2 × 3

8 → 2 × 4, 4 → 2 × 2

LCM = 2 × 2 × 2 × 3 = 24

ANS. LCM = 24

Expectation #2: Determine the common factor of polynomials.

3. Factor completely. (2 marks each)

a) $4x + 12$ GCF = 4

$4(x+3)$

b) $21xy^3 - 14x^2y^2$ GCF = $7xy^2$

$7xy^2(3y-2x)$

4 marks

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6. Identify binomials that represent the length and width of the rectangle. Then calculate the length and width of the rectangle if $x = 5cm$. (2 marks)

length $(x-3)$

$area = x^2 - 7x + 12$

width $= (x-4)$

Factor: $x^2 - 7x + 12$

$(x-4)(x-3)$

Substitute $x=5$ into both binomials:

$(5-4)(5-3)$

$(1)(2)$

↓ length ↓ width

length = 2 cm

width = 1 cm

Expectation #4: Factor a difference of squares (special trinomial).

7. Give an example of a difference of squares and then factor the expression. (2 marks)

$x^2 - 4 = x^2 - (2)^2 = (x-2)(x+2)$

OR: $x^2 - 9 = x^2 - (3)^2 = (x-3)(x+3)$

OR: $x^2 - 16 = x^2 - (4)^2 = (x-4)(x+4)$

⋮

etc.

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Expectation #3: Factor trinomials.

4. Determine two values of b that allow the following expression to be factored: (2 marks)

$$x^2 + bx + 8$$

Factors of 8:
1, 8
2, 4
-1, -8
-2, -4

4 Answers:
(1) $(x+1)(x+8) \rightarrow b = 9$
(2) $(x+2)(x+4) \rightarrow b = 6$
(3) $(x-2)(x-4) \rightarrow b = -6$
(4) $(x-1)(x-8) \rightarrow b = -9$

5. Factor completely. (2 marks each)

b) $x^2 - x - 20$

$(x+4)(x-5)$

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

$(x+3)(x+3)$

(8 marks)

c) $2x^2 + 5x - 12$

CHECK: NO GCF.

So, $2 \times -12 = -24$
$8 + -3 = 5$
$8 \times -3 = -24$

$2x^2 + 8x - 3x - 12$
Find GCF Find GCF
$2x(x+4) - 3(x+4)$
$(2x-3)(x+4)$

d) $9x^2 - 21x + 6$

CHECK: GCF = 3

So, $3[3x^2 - 7x + 2]$

$3 \times 2 = 6$
$-1 + -6 = -7$
$-1 \times -6 = +6$

$3[3x^2 - 6x - x + 2]$
Find GCF Find GCF
$3[3x(x-2) - 1(x-2)]$
$3[(3x-1)(x-2)]$
$3(3x-1)(x-2)$

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