Dear Parents / Students

Due to the unprecedented situation, Knowledgeplus Training center is mobilized and will keep accompanying and supporting our students through this difficult time. Our Staff will be continuously, sending notes and exercises on a weekly basis through what's app and email. Students are requested to copy the notes and do the exercises on their copybooks. The answers to the questions below will be made available on our website on knowledgeplus.mu/support.php. Please note that these are extra work and notes that we are providing our students and all classes will be replaced during the winter vacation. We thank you for your trust and are convinced that, together, we will overcome these troubled times.

Knowledgeplus Training Center

Mathematics

Garde 9

Week 3

Notes and Exercise

Note:(All the Notes, Examples and Exercise are on the photos)

Note:(Please copy all the Notes, Examples and Exercise on your copy book).

Algebraic Mathematics Grade 9 weeks
Continue with Algebraic Equation

Algebraic Fractions
Solving linear equations involving algebraic fractions
(unknown in the numerator).
Example:
Solve to solve the following equation:

(a) $\dfrac{x}{4} = \dfrac{7}{2}$ (b) $\dfrac{5-x}{3} = \dfrac{2+x}{4}$

Solution

(a) $\dfrac{x}{4} = \dfrac{7}{2}$

$x = \dfrac{7}{2} \times 4^2$

$x = 7 \times 2$

$x = 14$

(b) $\dfrac{5-x}{3} = \dfrac{2+x}{4}$

$4(5-x) = 3(2+x)$

$20 - 4x = 6 + 3x$

$-4x - 3x = 6 - 20$

$-7x = -14$

$x = \dfrac{-14}{-7}$

$x = 2.$

Note:(Please copy all the Notes, Examples and Exercise on your copy book).

Example: 2

Solve the following equations:

(a) $\dfrac{x}{3} + \dfrac{x}{5} = \dfrac{4}{9}$

(b) $\dfrac{x+4}{2} - \dfrac{x-7}{3} = 5$

Solution:

(a) $\dfrac{x}{3} + \dfrac{x}{5} = \dfrac{4}{9}$

$\dfrac{5(x) + 3(x)}{15} = \dfrac{4}{9}$

$\dfrac{5x + 3x}{15} = \dfrac{4}{9}$

$\dfrac{8x}{15} = \dfrac{4}{9}$

$8x = \dfrac{4}{\overset{}{\underset{3}{9}}} \times \overset{5}{15}$

$8x = \dfrac{20}{3}$

$x = \dfrac{20}{3} \div 8$

$x = \dfrac{\overset{5}{\cancel{20}}}{3} \times \dfrac{1}{\underset{\underset{2}{4}}{\cancel{8}}}$

$\therefore x = \dfrac{5}{6}$

Note:(Please copy all the Notes, Examples and Exercise on your copy book).

(b) $\dfrac{x+4}{2} - \dfrac{x-7}{3} = 5$

$\dfrac{3(x+4) - 2(x-7)}{6} = 5$

$\dfrac{3x+12 - 2x+14}{6} = 5$

$3x+12 - 2x+14 = 5 \times 6$

$3x+12 - 2x+14 = 30$

$3x - 2x + 12 + 14 = 30$

$x + 26 = 30$

$x = 30 - 26$

$x = 4$

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Exercise 1

Solve the equations.

(a) $\dfrac{x}{5} = \dfrac{3}{5}$

(b) $\dfrac{x}{7} = -\dfrac{3}{4}$

(c) $\dfrac{1}{2}x = \dfrac{3}{4}$

(d) $\dfrac{3}{2}x = -\dfrac{1}{2}$

(e) $-\dfrac{3}{4} = \dfrac{8}{9}x$

(f) $-\dfrac{2x}{3} = \dfrac{8}{3}$

(g) $\dfrac{6x}{7} = \dfrac{1}{3}$

(h) $26 = \dfrac{13}{5}x$

(i) $-\dfrac{12}{5} = -\dfrac{4x}{9}$

(j) $\dfrac{10x}{11} = -3$

(k) $\dfrac{9x}{10} = -\dfrac{9}{5}$

(L) $-\dfrac{4}{7} = \dfrac{x}{21}$

Exercise 2

Solve the equation

(a) $\dfrac{4x + 5}{6} = \dfrac{7}{2}$

(b) $\dfrac{x + 5}{3} = 12$

(c) $\dfrac{2x + 1}{3} = \dfrac{5}{6}$

(d) $\dfrac{5y - 2}{4} = \dfrac{3}{2}$

(e) $\dfrac{6y + 3}{9} = 1$

Exercise 3

Solve the equation

(a) $\dfrac{3 - 5x}{4} = \dfrac{2 - 4x}{3}$

(b) $\dfrac{5x - 3}{3} = \dfrac{x - 2}{5}$

(c) $\dfrac{x - 1}{2} = \dfrac{x}{3}$

(d) $\dfrac{8y + 5}{15} = \dfrac{3y - 7}{5}$

(e) $\dfrac{3x - 10}{2} = x - 1$

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Exercise 4
Solve the equation

(a) $\dfrac{x}{2} + \dfrac{x}{3} = \dfrac{5}{6}$

(b) $\dfrac{x}{12} + \dfrac{3x}{4} = 5$

(c) $-\dfrac{x}{7} - \dfrac{x}{2} = \dfrac{9}{2}$

(d) $\dfrac{x}{4} - \dfrac{2x}{5} = 3$

(e) $\dfrac{2x}{8} - \dfrac{3x}{4} = \dfrac{9}{2}$

Exercise 5:
Solve the equation.

(a) $\dfrac{2x-1}{2} - \dfrac{x-5}{3} = \dfrac{5}{4}$

(b) $\dfrac{x-2}{5} - \dfrac{x-4}{2} = 2$

(c) $\dfrac{3x-6}{2} + \dfrac{2x+4}{3} = 7$

(d) $\dfrac{3x-1}{5} - \dfrac{2x-5}{2} = 1$

(e) $\dfrac{2x-1}{3} - \dfrac{3x}{4} = \dfrac{5}{6}$

Revision on Binomial expressions and Grade 9 Quadratics.

__Binomial expressions__
Examples
Evaluate $(2x+4)(3x+7)$
Solution
$(2x+4)(3x+7) = 2x(3x+7) + 4(3x+7)$
$\qquad\qquad\qquad = 6x^2 + 14x + 12x + 28$
$\qquad\qquad\qquad = 6x^2 + 26x + 28$

Note:(Please copy all the Notes, Examples and Exercise on your copy book).

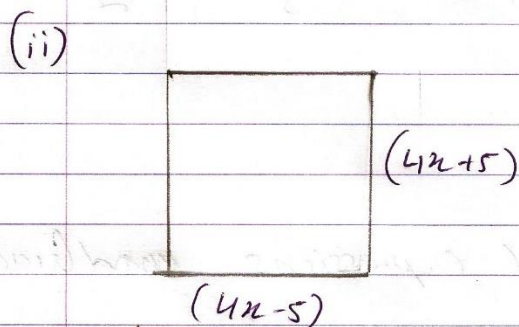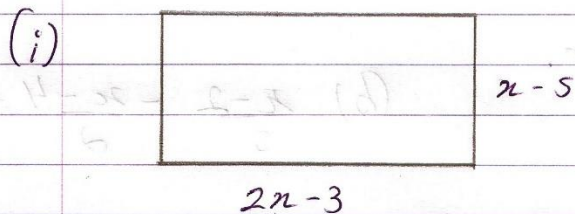Exercise1:
Find the product of the following
(a) $(x+3)(x+2)$ (b) $(a+7)(a+9)$ (c) $(2x+3)(5x+2)$

(e) $(x-3)(x+2)$ (f) $(a+7)(a-9)$ (g) $(2x+3)(5x-2)$

(h) $(x-3)(x-2)$ (i) $(a-7)(a-9)$ (j) $(2x-3)(5x-2)$

Exercise2
Formulate and simplify an expression for the
area of the following.

(i)

$x-5$

$2x-3$

(ii)

$(4x+5)$

$(4x-5)$

Note:(Please copy all the Notes, Examples and Exercise on your copy book).

Perfect Squares

Expand $(a+b)^2$ and $(a-b)^2$

(i) $(a+b)^2 = (a+b)(a+b)$
$$= a(a+b)+b(a+b)$$
$$= a^2+ab+ab+b^2$$
$$= a^2+2ab+b^2$$
$$= a^2+b^2+2ab$$

$(a-b)^2 = (a-b)(a-b)$
$$= a(a-b)-b(a-b)$$
$$= a^2-ab-ab+b^2$$
$$= a^2-2ab+b^2$$
$$= a^2+b^2-2ab.$$

Example:

(i) $(x+3)^2 = x(x+3)+3(x$

solution
$(x+3)^2 = (x+3)(x+3)$
$$= x(x+3)+3(x+3)$$
$$= x^2+3x+3x+9$$
$$= x^2+6x+9$$

(ii) $(x-3)(2x-y)^2$

Solution
$(2x-y)^2 = (2x-y)(2x-y)$
$$= 2x(2x-y)-y(2x-y)$$
$$= 4x^2-2xy-2xy+y^2$$
$$= 4x^2-4xy+y^2$$

Note:(Please copy all the Notes, Examples and Exercise on your copy book).

Exercise

(i) Expand the following

(a) $(x+4)^2$ (b) $(x-9)^2$ (c) $(x-4)^2$

(d) $(x-2y)^2$ (e) $(2x+1)^2$