Revision & Practice Worksheet 9

A Algebra: using the guess/check/improve method to solve equations

It is known that a solution to the equation $x^3 - 4x^2 - 14$ lies between 4.6 and 4.7. Find this solution to 2 decimal places.

B Number skills: Converting between decimals and fractions

1 Make these into percentages to 2 decimal places:

(a) $6\frac{1}{4}$ (b) $5\frac{1}{8}$ (c) $3\frac{1}{3}$ (d) $\frac{5}{7}$

(e) $2\frac{3}{7}$ (f) $11\frac{1}{4}$ (g) $9\frac{1}{5}$ (h) $5\frac{1}{9}$

(i) $6\frac{2}{9}$ (j) $11\frac{1}{3}$ (k) $5\frac{2}{7}$ (l) $9\frac{4}{9}$

2 Make these into fractions:

(a) 280%   (b) 540%   (c) 67%   (d) 68%

(e) 32.5%   (f) 93.4%   (g) 38.4%   (h) 29.6%

(i) 4.05%   (j) 135%   (k) 5.05%   (l) $16\frac{1}{2}\%$

C Number applications: Increasing or decreasing quantities in a ratio

1 If William drinks 250 mL of milk every 3 hours, then at this rate how many litres of milk will he drink in:

(a) 4 hours   (b) $6\frac{1}{2}$ hours   (c) 8 hours

(d) $9\frac{1}{4}$ hours   (e) 12 hours

2 If a flywheel in a wheat harvester turns 35 times every $1\frac{1}{2}$ minutes then how long will it take for the wheel to turn:

(a) 70 times   (b) 105 times   (c) $17\frac{1}{2}$ times

(d) $87\frac{1}{2}$ times   (e) $157\frac{1}{2}$ times

D Algebra: Solving complex quadratic equations

1 Solve these equations by completing the square, and express the solutions in surd form:

(a) $x^2 - 2x - 10 = 0$ (b) $x^2 + 4x - 13 = 0$ (c) $x^2 + 2x - 5 = 0$

(d) $x^2 - 4x + 1 = 0$ (e) $x^2 + 6x - 11 = 0$ (f) $x^2 - 6x - 20 = 0$

2 Use the general quadratic equation to solve these equations, and express the solutions in surd form:

(a) $x^2 - 2x - 5 = 0$ (b) $x^2 + 3x - 7 = 0$ (c) $x^2 + 5x - 7 = 0$

(d) $x^2 - 3x - 8 = 0$ (e) $x^2 - 4x - 11 = 0$ (f) $x^2 - x - 10 = 0$

E Cartesian plane: Finding the gradient of a line between two points

1 Find the gradient of the line between these points using the graph construction method:

(a) (0, 0) and (−3, 2)   (b) (0, 0) and (1, −4)   (c) (1, 1) and (4, −3)

(d) (2, −5) and (5, 3)   (e) (−2, 5) and (3, −5)

2 Find the gradient of the line between these points using the formula method:

(a) (1, 1) and (4, 5)   (b) (3, 6) and (2, 8)   (c) (1, 1) and (4, −2)

(d) (1, −4) and (5, 2)   (e) (−3, 2) and (4, −6)

Worksheet 9

A 4.65

B 1
(a)	625%	(b)	512.5%	(c)	333.33%	
(d)	71.43%	(e)	242.86%	(f)	1125%	
(g)	920%	(h)	511.11%	(i)	622.22%	
(j)	1133.33%	(k)	582.57%	(l)	944.44%	

2
(a)	$2\frac{4}{5}$	(b)	$5\frac{2}{5}$	(c)	$\frac{67}{100}$	(d)	$\frac{17}{25}$
(e)	$\frac{13}{40}$	(f)	$\frac{467}{500}$	(g)	$\frac{48}{125}$	(h)	$\frac{37}{125}$
(i)	$\frac{81}{2000}$	(j)	$1\frac{17}{20}$	(k)	$\frac{101}{2000}$	(l)	$\frac{33}{200}$

C 1
(a) $333\frac{1}{3}$ mL (b) $541\frac{2}{3}$ mL (c) $666\frac{2}{3}$ mL
(d) $770\frac{5}{6}$ mL (e) 1000 mL = 1 litre

2
(a) 3 mins (b) $4\frac{1}{2}$ min (c) $\frac{3}{4}$ min
(d) $3\frac{3}{4}$ min (e) $6\frac{3}{4}$ min

D 1
(a) $1+\sqrt{11},\ 1-\sqrt{11}$ (b) $-2+\sqrt{17},\ -2-\sqrt{17}$
(c) $-1+\sqrt{6},\ -1-\sqrt{6}$ (d) $2+\sqrt{3},\ 2-\sqrt{3}$
(e) $-3+2\sqrt{5},-3-2\sqrt{5}$ (f) $3+\sqrt{29},\ 3-\sqrt{29}$

2
(a) $\dfrac{2\pm\sqrt{24}}{2}=1\pm\sqrt{6}$ (b) $\dfrac{-3\pm\sqrt{37}}{2}$

(c) $\dfrac{-5\pm\sqrt{53}}{2}$ (d) $\dfrac{3\pm\sqrt{41}}{2}$

(e) $\dfrac{4\pm\sqrt{60}}{2}=2\pm\sqrt{15}$ (f) $\dfrac{1\pm\sqrt{41}}{2}$

E 1
(a) $-\frac{2}{3}$ (b) -4 (c) $-1\frac{1}{3}$ (d) $2\frac{2}{3}$
(e) -2

2
(a) $1\frac{1}{3}$ (b) -2 (c) -1 (d) $1\frac{1}{2}$
(e) $-1\frac{1}{7}$