ENGINEERING MATHEMATICS

CHECKING THE FOUNDATIONS

1.Evaluate the following:

a) $\frac{2}{3}+\frac{3}{4}$

b) $\frac{4}{5}x\frac{3}{16}$

c) $\frac{6}{7}\div\frac{16}{21}$

2.Simplify these algebraic expressions:

a) y^2y^3y b) $\frac{t^7}{t^3}$

c) $\left(\frac{2m^3n^2}{m^2n}\right)^2$

3.Express in simplest form:

a) $(2^6)^{1/3}$ b) $\sqrt{\frac{25}{16}}$

c) $\frac{1}{2^{-3}}$ d) $(3mn^3+2m^3n)^0$

4.Expand and simplify:

a) $(x+2)(x-2)$

b) $2(5a+3b)-3(a-4b)$

5.Factorise:

a) $2x+12y$ b) $3x+6xy$

c) x^2+5x+6

6.Simplify:

a) $\frac{x}{4}+\frac{x}{7}$

b) $\frac{x+2}{x^2+3x+2}$

7.Solve the following for the pronumeral:

a) $3x+10=31$

b) $5y-13=2y+17$

c) $m^2+3m+2=0$

8.Make N the subject of the formula: $L=\frac{mN^2A}{(x+y)}$

9. Find the side length of a square whose diagonal is 12cm. Leave your answer in square-root form.

ANSWERS

1a) $\frac{17}{12}$ b) $\frac{3}{20}$ c) $\frac{9}{8}$

2a) y^6 b) t^4 c) $4m^2n^2$

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

4a) x^2-4 b) $7a+18b$

5a) $2(x+6y)$ b) $3x(1+2y)$ c) $(x+2)(x+3)$

6a) $\frac{11x}{28}$ b) $\frac{1}{(x+1)}$

7a) $x=7$ b) $y=10$ c) $m=-2, m=-1$

8 $N= \pm\sqrt{\frac{L(x+y)}{mA}}$

9. $\sqrt{72}=6\sqrt{2}$