S3 National 5
Block Test 2 Revision Sheet
ANSWERS

Non-Calculator

Fractions

Question 1

(a) $\frac{3}{5}$ (b) $\frac{22}{15}$ or $1\frac{7}{15}$ (c) $\frac{2}{9}$ (d) $\frac{17}{40}$

(e) $\frac{131}{20}$ or $6\frac{11}{20}$ (f) $\frac{61}{35}$ or $1\frac{26}{35}$ (g) $\frac{31}{15}$ or $2\frac{1}{15}$ (h) $\frac{31}{12}$ or $2\frac{7}{12}$

Question 2

(a) $\frac{7}{18}$ (b) $\frac{3}{8}$ (c) $\frac{14}{5}$ or $2\frac{4}{5}$ (d) $\frac{25}{3}$ or $8\frac{1}{3}$

(e) $\frac{5}{4}$ or $1\frac{1}{4}$ (f) $\frac{7}{6}$ or $1\frac{1}{6}$ (g) 6 (h) $\frac{4}{3}$ or $1\frac{1}{3}$

Question 3

Find:

(a) $\frac{5}{9}$ (b) $\frac{3}{4}$ (c) $\frac{13}{28}$

(d) $\frac{1}{6}$ (e) $\frac{44}{15}$ or $2\frac{14}{15}$ (f) $\frac{5}{3}$ or $1\frac{2}{3}$

Function Notation

Question 1

(a) 0 (b) 5 (c) $a^2 - 4a$

Question 2

(a) $x = 4$ (b) $x = -1$ (c) $x = \frac{2}{5}$

Algebraic Expressions

Question 1

(a) $7a + 3$ (b) $4x + 2$ (c) $5b - 6$
(d) $10g - 2$ (e) $9 - 5y$ (f) $12c - 3$
(g) $2h + 4$ (h) $3ab + 2a$ (i) $6 - 21m$
(j) $8y$ (k) $9a - 6$ (l) $13 - 4p$
(m) $15y - 4$ (n) $b + 9$ (o) $14 - 10y$
(p) $15 - 4x$ (q) $2 - 3c$ (r) $11 - 12g$

Question 2

(a) $3x^2 - 18x + 15$ (b) $a^2 + 6a + 4$ (c) $2y^2 - 16y + 14$
(d) $3c^2 + 23c + 14$ (e) $3b^2 - 11b + 8$ (f) $5p^2 + 16p + 11$
(g) $4z^2 - 10z - 6$ (h) $4x^2 - 4x - 3$ (i) $2c^2 - 5c - 12$
(j) $5p^2 + 13p - 28$ (k) $6x^2 - x - 2$ (l) $7a^2 + 13a + 6$
(m) $3y^2 - 4y + 1$ (n) $9c^2 - 4$ (o) $8b^2 + 8b + 2$

Question 3

(a) $x^2 + 2x + 1$ (b) $w^2 - 6w + 9$ (c) $a^2 - 8a + 16$
(d) $y^2 - 16y + 64$ (e) $a^2 + 14a + 49$ (f) $c^2 - 2c + 1$

Question 4

(a) $x^3 + 5x^2 + 5x - 2$ (b) $p^3 - 6p^2 + 11p - 6$
(c) $u^3 - 7u^2 + 11u + 4$ (d) $3a^3 - 13a^2 - 3a + 20$
(e) $8n^3 - 14n^2 + 13n - 15$ (f) $2p^3 - 16$

Question 5

(a) $x(x - 4)$ (b) $(x + 7)(x + 5)$ (c) $(a - 6)(a + 6)$ (d) $(x + 7)(x - 2)$
(e) $(x - 8)(x - 4)$ (f) $(x - 12)(x + 3)$ (g) $5(x^2 + 12)$ (h) $(x - 10)(x + 2)$
(i) $(a - 10)(a - 4)$ (j) $(x - 6)(x - 4)$ (k) $(2d - 1)(d + 5)$ (l) $3(g - 4)(g + 4)$
(m) $(h + 14)(h + 1)$ (n) $(n + 8)(n - 2)$ (o) $(5p - 7)(p + 1)$ (p) $2(u - 3w)(u + 3w)$

Changing the Subject of the Formula

Question 1

(a) $x = y - 3$ (b) $x = y + b$ (c) $x = \frac{y}{k}$ (d) $x = y + 5t$
(e) $x = \frac{y-4a}{7}$ (f) $x = \frac{y-b}{a}$ (g) $x = \frac{p-2r}{q}$ (h) $x = \frac{h-k}{m}$

Question 2

(a) $x = \frac{3}{y}$ (b) $x = \frac{a+2}{5}$ (c) $x = 9a - 8$ (d) $x = \frac{2}{y-1}$
(e) $x = \frac{v^2-u^2}{2a}$ (f) $x = \frac{(L-3)^2}{6}$ (g) $x = 4k^2 - 4$ (h) $x = \frac{ty^2}{4z}$

Straight Line

Question 1

(a) $m = 1$, (0,-7) (b) $m = -5$, (0,-3) (c) $m = \frac{3}{5}$, (0,-2)

(d) $m = -4$, (0,0) (e) $m = -2$, (0,11) (f) $m = \frac{1}{2}$, $\left(0, -\frac{5}{2}\right)$

(g) $m = \frac{1}{3}$, (0,6) (h) $m = -\frac{3}{7}$, (0,3) (i) $m = \frac{4}{5}$, (0,-4)

Question 2

(a) $y = 3x - 5$

(b) $y = -2x + 1$

(c) $y = \frac{3}{4}x - 3$

Question 3

(a) $y = 3x - 5$ (b) $y = -4x + 16$ (c) $y = \frac{1}{2}x$

(d) $y = -2x - 5$ (e) $y = 2x + 4$ (f) $y = -\frac{1}{3}x + 1$

Statistics

Question 1

(a) Median = 7, Lower Quartile = 2, Upper Quartile = 10, SIQR = 4

(b) Median = 23, Lower Quartile = 14, Upper Quartile = 25·5, SIQR = 5·75

Question 2

(a) Median = 5, SIQR = 2·25

(b) On average, midday temperatures in Endoch are higher since 8 > 5.
The midday temperatures in Endoch are more consistent since 1·5 < 2·25.

Question 3

(a) $W = 20A + 40$

(b) 280 kg

Question 4

(a) Median = 19·5, SIQR = 4·5

(b) On average, the couples performed better in the second round since 26 > 19·5.
The scores in the second round were more consistent since 2·5 < 4·5.

Percentages

Question 1
600 000

Question 2
400 g

Trigonometry

Question 1
12 cm

Question 2
32 cm^2

Question 3
8 cm

Volume

Question 1
1 884 cm^3

Question 2
314 cm^3

Question 3
1 256 cm^3

Question 4
11·5 cm

Scientific Notation

Question 1

Write each of the following numbers in scientific notation:

(a) $1{\cdot}2 \times 10^{3}$ (b) $4{\cdot}125 \times 10^{6}$ (c) $2{\cdot}25 \times 10^{2}$ (d) $6{\cdot}7 \times 10^{4}$

(e) 9×10^{0} (f) $4{\cdot}1 \times 10^{7}$ (g) $9{\cdot}2 \times 10$ (h) $2{\cdot}4 \times 10^{11}$

Question 2

Write each of the following numbers in scientific notation:

(a) $5{\cdot}7 \times 10^{-2}$ (b) $2{\cdot}1 \times 10^{-3}$ (c) $8{\cdot}4 \times 10^{-1}$ (d) $9{\cdot}15 \times 10^{-11}$

(e) 7×10^{-4} (f) $8{\cdot}004 \times 10^{-2}$ (g) $1{\cdot}2 \times 10^{-6}$

Question 3

Write each of the following numbers out in full:

(a) 160 000 (b) 2 780 (c) 122 000 000 (d) 40 000

(e) 200·3 (f) 5·7 (g) 0·006 (h) 0·000 004 52

(i) 0·000 100 3 (j) 0·000 072 (k) 0·023 (l) 0·006 000 4

Calculator

Percentages

Question 1
£92 317·43

Question 2
£212·24

Question 3
6 300 000 000

Question 4
£1 536

Question 5
£5 644·80

Question 6
£155 000

Question 7
4 200

Question 8
£350

Trigonometry

Question 1
(a) 8·46 cm (b) 6·28 cm (c) 26° (d) 75·5°

Question 2
(a) 11·85 cm
(b) 8·20 cm
(c) 110·09 cm^2

Question 3
(a) 6·67 cm
(b) 48·3°
(c) 100°
(d) 8·84 cm
(e) 25·58 cm^2

Question 4

28·13 cm

Question 5
11·0 km

Statistics

Question 1
(a) Mean = 21, Standard Deviation = 2·10.
(b) On average, Machine B packs less sprouts since 19 < 21.
Machine A is more consistent at packing sprouts since 2·10 < 2·3.

Question 2
(a) (i) 56·5 (ii) 2·43
(b) The new training programme has not improved her consistency since 3·2 > 2·43.

Volume

Question 1
Calculate the volume of the following shapes:

(a) 6 480 mm^3 (b) 125·66 cm^3 (c) 3 053·63 mm^3

Question 2
3 419·83 m^3

Question 3
12 331·80 mm^3

Question 4
8·8 cm

Scientific Notation

Question 1
(a) 6×10^8 (b) 6×10^5 (c) $3{\cdot}2 \times 10^4$ (d) 9×10^{-7}

Question 2
(a) $6{\cdot}66 \times 10^8$
(b) 3×10^{30}

Question 3
$1{\cdot}65 \times 10^9$