S3 Revision Booklet – Solutions

Percentages (App/Dep)

1a) £466.19 b) £4,604.40 c) £226,919.82

2. £44,446.32

3. £5,700.00

4. £30,147.53

5. £138,167.59

7. 4 years

8. 0.82 litres

9. $292.85cm$

10. 27,000 flamingos

11. Population of 5,332,877

12. £35,101.48

Arc Length and Sector Area ($\pi = 3.14$)

1a. $16.76cm$ $(16.75cm)$

b. $62.83cm$ $(62.8cm)$

c. $219.91mm$ $(219.8mm)$

d. $7.64cm$ $(7.64cm)$

e. $26.49cm$ $(26.48cm)$

f. $125.66mm$ $(125.6mm)$

2a. $47.52cm^2$ $(47.49cm^2)$

b. $463.60mm^2$ $(463.37mm^2)$

c. $589.05cm^2$ $(588.75cm^2)$

d. $982.97cm^2$ $(982.47cm^2)$

e. $3{,}959.72mm^2$ $(3{,}957.71mm^2)$

f. $36.93cm^2$ $(36.91cm^2)$

Expanding Brackets

1a. $5x + 5$ b. $7x + 21$ c. $6x$ d. $8x + 16$ e. $mx + 6m$ f. $ax + 9a$

g. $4x - 16$ h. $2x - 6$ i. $x^2 + 2x$ j. $x^2 + 6x$ k. $mx - mn$ l. $x^2 - 5x$

2a. $10x + 5$ b. $21x + 21$ c. $18x + 9$ d. $20x + 25$ e. $2mx + 4m$ f. $2ax + 9a$

g. $12x - 8$ h. $12x - 12$ i. $8x + 2a$ j. $10x - 20$ k. $2x^2 + 7x$ l. $3x^2 + 12x$

Question 5

a. $7y + 29$ b. $21w + 48$ c. $11y + 14$ d. $9g + 11$ e. $2x + 20$ f. $-4y - 11$

g. $7m + 55$ h. 26 i. $30y + 16$

Factorising

1a. $2(2x + 3)$ b. $5(3x + 4)$ c. $3(3y - 4)$ d. $5(x + 3)$ e. $3(2x - 1)$ f. $4(x + 2)$

g. $5(y - 5)$ h. $8(w + 3)$ i. $5(2y + 3)$ j. $7(2w + 3)$ k. $10(2y - 3)$ l. $9(3x + 2)$

Equations

2a. $x = 3$ b. $w = 5$ c. $y = 4$ d. $x = 3$ e. $c = 10$ f. $m = 3$

$a. x = 3$ b. $x = 6$ c. $x = 4$ d. $x = 9$ e. $x = 4$ f. $x = 17$

Statistics

1a. mean = 7, mode = 5, median = 6, range = 12

b. mean = 19.5, mode = 11,29, median = 18, range = 19

c. mean = 5.5, mode = does not exist, median = 5.5, range = 9

d. mean = 123, mode = 134, median = 121, range = 45

e. mean = 5, mode = 3,4,5,9, median = 4.5, range = 8

2a) mean = £1,000 mode = £100 median = £320 range = £5,330

Quartiles and IQR

1. Median = 8.5 $Q_1 = 7$ $Q_3 = 12$ $IQR = 5$
2. Median = 21 $Q_1 = 9$ $Q_3 = 36$ $IQR = 27$
3. Median = 11.5 $Q_1 = 5$ $Q_3 = 22$ $IQR = 17$

Standard Deviation

1a. mean = 4.6 b. SD = 4.1

2a. mean = 12.75 b. SD = 3.99

3a. mean = 150 b. SD = 61.64

4a. mean = 84.33 b. SD = 1.28

Angles in Semi-Circles

1. 67^0 2. 73^0 3. 55^0 4. 48^0

Tangents & Circles

1. 53^0 2. 38^0 Unlabelled: 39^0 4. 102^0 5. 121^0

Volume ($\pi = 3.14$)

1. $113.10cm^3$ $(113.04cm^3)$
2. $20.94cm^3$ $(20.93cm^3)$
3. $871.27cm^3$ $(870.83cm^3)$
4. $523.60cm^3$ $(523.3cm^3)$
5. $11{,}987.63cm^3$ $(11{,}987.63cm^3)$
6. $110.84cm^3$ $(110.78cm^3)$

Composite Volume – ASSUMING PI IS 3.14

8. $3820cm^3$

6. $870cm^3$

Similarity

1a. $x = 10cm$ b. $x = 53.3mm$

Similar Areas and Volumes

1. $27.2m^2$ 2. $126cm^2$ 3. –

11. $1041.67ml$ 12. $51{,}840cm^3$ 13. $0.53m^3$ 14. $3{,}292.8cm^3$ 15. $500ml$

Ratio

1a) 36 black socks b) 48 socks

2. 6 apples

3. 72 strawberry sweets

$a.\ £8 : £12$ b. $5cm : 10cm$ c. $£6 : £18$ d. $20 : 15$ e. $33g : 22g$ f. $9kg : 45kg$

Speed, Distance, Time

Q3

a. 42mph b. 6mph c. 68mph d. 38mph e. 180mph

Q7

a. 60m b. 48km c. 130m d. 155m e. 182m f. 188.5m g. 8.4m

Q10

a. 2h 30m b. 1h 30m c. 1h 15m d. 45m e. 4h 45m f. 2h 12m g. 8h 42m

Money

1. £545 Difference: £45
2. £460 Difference: £30

11. 54 Euro

12. £130.77

Probability

Q1 a. $P(red) = 3/5$ b. P(white) = 2/5

Q2 a. $P(star) = 1/12$ b. $P(triangle) = 5/12$ c. $P(circle) = 1/2$

Gradient

Ex1

1) 2 2) 4 3) 2 4) 1 5) 1 6) 3

1) 0.1

2a) 0.2 b) Yes, as 0.2 < 0.3