NEW CENTURY MATHS 11
MATHEMATICS STANDARD (PATHWAY 2)

FULLY WORKED SOLUTIONS

Practice paper 1

Section 1

Question 1

$4ab + b^2 - 4b^2 = 4ab - 3ab + b^2 - 4b^2 = ab - 3b^2$

$\therefore$ B

Question 2

A, C, D are all measurements.

$\therefore$ continuous.

B is number of tries. These can be counted and so it is discrete.

$\therefore$ B

Question 3

$$\frac{^{1}8t^{6}}{^{2}16t^{2}} = \frac{t^{6-2}}{2} = \frac{t^{4}}{2}$$

$\therefore$ D

Question 4

No. in Year 12 in sample = Fraction of Year 12 in school $\times 50$

$$= \frac{\text{Number in year 12}}{\text{Total number in school}} \times 50$$

$$= \frac{96}{(114 + 120 + ... + 96)} \times 50$$

$$= \frac{96}{677} \times 50$$

$$= 7.09...$$

$\therefore$ B

© Cengage Learning Australia Pty Ltd 2017

Question 5

Clustered means grouped together. So between 45 and 55.
$\therefore$ C

Question 6

$$5-2x=-6$$
$$-2x=-11$$
$$x=\frac{-11}{-2}$$
$$=5\frac{1}{2}$$
$\therefore$ B

Question 7

$$v=u+at$$
$$=8+10\times 5$$
$$=58$$
$\therefore$ B

Question 8

No. of families = total of heights of columns
$$=3+6+12+4+2$$
$$=27$$
$\therefore$ C

Question 9

Total of books sold $=\$29\times 7200$
$=\$208\ 800$
Royalty $=12\%$ of total money
$=0.12\times\$208\ 800$
$=\$25\ 056$
$\therefore$ A

© Cengage Learning Australia Pty Ltd 2017

Question 10

Price with GST = \$137.50

$$110\% = \$137.50$$
$$1\% = \frac{\$137.50}{110}$$
$$100\% = \frac{\$137.50}{110} \times 100\%$$
$$= \$125$$

$\therefore$ D

Section 2

Question 11

a $9x - 11 = 4x + 7$

$9x = 4x + 18$

$5x = 18$

$x = \frac{18}{5}$

$x = 3\frac{3}{5}$

b **i** Missing value is in between 16 and 18. So, it could be 16 minutes, 17 minutes or 18 minutes.

ii Counting all of the leaves

$\therefore$ 19 patients

iii Half an hour = 30 minutes

So, counting number of leaves greater than 30.

$\therefore$ 4 out of the 19 patients waited longer than half an hour.

So, % waited over half an hour $= \frac{4}{19} \times 100\%$

$= 21.05...\%$

$\approx 21.1\%$

iv Looking at first leaf: 2 minutes.

c **i** Weekly pay $= (38 + 2 \times 1.5) \times \$25 = \$1025$

ii $\$452.25 = (12 + x \times 1.5) \times \$33.50$

$\frac{\$452.25}{\$33.50} = (12 + x \times 1.5)$

$13.5 = 12 + 1.5x$

$1.5 = 1.5x$

$1 = x$

$\therefore$ Overtime hours = 1

iii $\$1204.72 = (38 + 4 \times 1.5) \times x$

$\$1204.72 = 44x$

$\frac{\$1204.72}{44} = x$

$x = 27.38$

$\therefore$ Pay rate is \$27.38.

© Cengage Learning Australia Pty Ltd 2017

iv $\$976.5 = (x + 3 \times 1.5) \times \$31$

$\$976.5 = (x + 4.5) \times \$31$

$\$976.5 = 31x + 139.5$

$837 = 31x$

$x = \frac{837}{31}$

$x = 27$

$\therefore$ Normal hours = 27.

Question 12

a $3(2p + 5) - 4(p + 3) = 6p + 15 - 4p - 12$

$= 2p + 3$

b Childs dose $= \frac{kA}{70}$

$= \frac{22 \times 20}{70}$

$= 6.285...$ mL per day

So, $\frac{300 \text{ mL}}{6.285... \text{ mL}} = 47.7...$

$\therefore$ The bottle will last for 47 days.

c Holiday loading = 17.5% of 4 weeks pay

$= 0.175 \times (4 \times \$925)$

$= 0.175 \times \$3700$

$= \$647.50$

d Total sales $= \$810\ 000 + \$675\ 000 + \$408\ 600$

$= \$1\ 893\ 600$

$\therefore$ Commission = 2% of \$1 893 600

$= 0.02 \times \$1\ 893\ 600$

$= \$37\ 872$

e **i** Poor service and limited clothing sizes available.

ii True – limited range was 4th whilst poor quality of material was 6th.

iii Train staff to provide good customer service, order more clothing sizes, reduce prices to compete with other stores, sell more men's and women's clothing.

© Cengage Learning Australia Pty Ltd 2017

Question 13

a Number of hours $= \dfrac{0.026}{0.015}$

$= 1.73333...$ hours

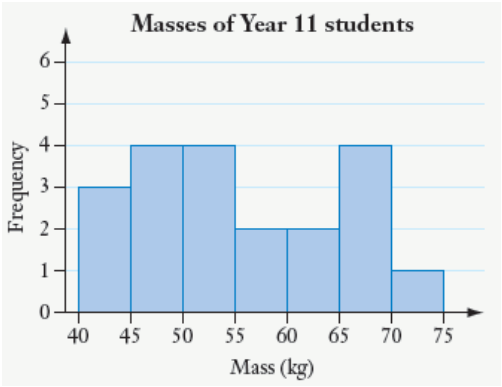
$= 1$ h 44 min (Use DMS button)

b **i** As a measurement → continuous

ii

Masses (kg)	Frequency
40–<45	3
45–<50	4
50–<55	4
55–<60	2
60–<65	2
65–<70	4
70–<75	1

iii



iv $\dfrac{7}{20} \times 100\% = 35\%$

c Taxable income $=$ Gross income $-$ Tax deductions

$= (\$1874.60 \times 52) - \$2415$

$= \$97\ 479.20 - \$2415$

$= \$95\ 064.20$

$\approx \$95\ 064$ (round down)

So, 4th row of income tax table:

Tax payable $= \$19\ 822 + 0.37 \times (\$95\ 064 - \$87\ 000)$

$= \$22\ 805.68$

© Cengage Learning Australia Pty Ltd 2017