

المدرسة
الوطنية الأرثوذكسية
الشميساني



The National
Orthodox School
Shmaisani

Unit 7: Equations and Formulae

The book.

Accredited by



Cambridge Assessment
International Education
Cambridge International School

edexcel

CIS
COUNCIL OF
INTERNATIONAL
SCHOOLS



مُعْتَمَدَةٌ مِنْ

Chapter 7

Check in

1 $2f + 3$

2 a 3

b 5

c 40

Exercise 7A

1 a 8 b 10 c 29 d 7

2 a 4 b 9 c 8 d 24

3 a 0 b 16 c 21 d -4

e 96 f 10 g 4 h 40

i -10 j 26 k 10

4 $4y - 6$ and xy both equal 2; $x + 3 = 4$; $x + y = 3$

5 a $P = 2a + 2b + c$ b 20 cm

6 Always

$3x + 5 = 5 + 3x$

Sometimes

$2x = 10$ only if $x = 5$

$4 + 5y = 9y$ only if $y = 1$

$2p - 3 = 3 - 2p$ true only if $p = 1.5$

Never

$m + 2 = m + 5$ as the right-hand side will always be 3 higher than the left-hand side

Exercise 7B

1 $S = B + G$

2 $W = M - G$

3 $T = H + G$

4 $P = \frac{T}{M}$

5 a $C = \$7M$ b $K = \$MA$

6 a $C = 40P$ cents b $K = PA$ cents

7 a $C = \$2(B + G)$ b $C = \$D(B + G)$

8 $L = W - X$

9 $I = 50D$

10 $M = 60H$

11 $m = 1000k$

12 a $P = A + B + C + D + E + F$ b $M = YP$ cents

13 a $6n$ km b $D = (6n + 3m)$ km

14 a $C = 4(x + y + z)$ b $C = P(x + y + z)$

15 a $\$0.45M$ b $\$0.25G$ c $T = \$(0.45M + 0.25G)$

Exercise 7C

1 $I = 8900D$; 3 738 000 IDR

2 \$600

3 $h = 24d$; 72 hours

4 2500 Indian rupees

5 $T = 2 + m$; \$10

6 $m = 1000L$; 2400 ml

7 a $s = 8r$ b 56 sockets

Exercise 7D

1 a $x = \frac{b}{2}$ b $x = y - 3$ c $x = m + d$ d $x = yt$

2 The subtraction is the wrong way round: he should have subtracted b from h

3 a $D = \frac{I}{50}$ b $H = \frac{M}{60}$ c $k = \frac{m}{1000}$

4 $x \div y = p$ $x = yp$ $\frac{x}{p} = y$ $\frac{p}{x} = \frac{1}{y}$ $x = py$

5 many are possible, including $m = t - v$, $v = t - m$, $m - t = -v$,
 $v - t = -m$

Exercise 7E

1 $a = 3$

2 $b = 8.5$

3 $c = 1$

4 $d = 4$

5 $e = 5$

6 $f = 5$

7 $g = 3$

8 because $5 + 7 = 12$ not 11

9 $i = 3$

10 $j = 1$

11 $k = 0$

12 She should have subtracted 8 first then divided by 2, or if she is going to divide by 2 first then she should have divided the 8 by 2 as well

13 $m = 3$

14 $n = 5$

15 $o = 10$

16 $p = 0$ is a solution

17 $q = 3$

18 $r = 2$

19 a $s = 7$

b the bar of length 1 is more than half of the length of the bar of length 17 and $s = 8$ but the bars for s are much smaller in length than the bar for 1, you can improve the diagram by making the bar lengths more in proportion to the values.

20 $t = 3$

21 $u = 5$

22 $v = 7$

23 a 30

b 20

c 32

d 10

e 0

f 4

24 a $7x = 35$

$x - 0.5 = 4.5$

$2x + 4 = 14$

Exercise 7F

- 1 $x = 9$
- 2 $p = 8$
- 3 $T = 25$
- 4 $t = 4$
- 5 $g = 22$
- 6 $y = 42$
- 7 $x = 144$
- 8 $y = 4$
- 9 $m = -10$
- 10 $x = -5$
- 11 a 48, 49, $49 + 2x$ or 57
b 10, 30, $25 + 2y$ or 45
- 12 many possible answers, e.g. $4x - 2 = 26$

Exercise 7G

- 1 $3x = 78; x = 26$
- 2 $x - 2 = 29; x = 31$
- 3 $3x = 36; x = 12$
- 4 a $2x = 24; x = 12$ b $x + 14 = 30; x = 16$
c $\frac{x}{5} = 20; x = 100$ d $2x + 3 = 27; x = 12$
- 5 a $68 + x = 180$ b 112
- 6 $2n + 7 = 31, n = 12$
- 7 $\frac{n}{2} - 2 = 18, n = 40$
- 8 $2x + 6 = 74; x = 34$ so Stacy has 40 oranges
- 9 6 cm
- 10 width = 10.5 cm
- 11 Peter gets \$37.50
- 12 114 men

The homework book

7A

- 1 a 30 b 9 c 53 d 0
e 36 f 36 g 109 h 54
2 a 25 b 10 c 23 d 59
e 39 f 7 g 241 h 36
i 1 j 2 k 17 l 3
3 a 24 b 62 c 11 d 29
e 2 f -3 g 28 h 15
i 2 j 1 k 16 l 1.5
4 a $4x + 2y$
b 22 cm
c $19\frac{13}{15}$ cm

7B

- 1 $C = 8t$
2 $P = bn$
3 $N = x - y$
4 $C = 2x + 3y$
5 $C = 5x + 3y$

7C-7D

- 1 a $c = 100m$ b 580 cm
2 a $D = 1.38P$ b \$474
3 a $T = 20 + 5n$ b \$80
4 a $x = \frac{y}{3}$ b $x = \frac{m}{7}$ c $x = y - 2$
d $x = y + 4$ e $x = p - 5$ f $x = ab$
g $x = cy$ h $x = \frac{4}{y}$

- 5 Some possible rearrangements: $2p = r + q$, $q = 2p - r$,

Galaxy_Z_Flip4, $2p - q - r = 0$

7E-7F

1 a $x + 4 = 10$

b

c $k + 6 = 20$

d

2 a 4

b 5

e 10

f 16

i 6

j 6

m 5

n 0

q $\frac{1}{3}$

r $4\frac{1}{4}$

3 a 3

b 7

e 7

f 9

i 1

j $1\frac{3}{7}$

m $2\frac{1}{2}$

n $2\frac{1}{3}$

$y + 7 = 12$

6, 5, 14

c 2

d 7

g 2

h -2

k 9

l 8

o 18

p $4\frac{1}{2}$

c 8

d 6

g 4

h 10

k -2

l -5

o $1\frac{3}{4}$

4 a 4

b $3\frac{1}{2}$

c -2

d 9

e 6

f 7

7G

1 a $4x = 52, x = 13$

b $3x + 6 = 27, x = 7$

c $2x = 8 = 10, x = 9$

d $7x + \frac{1}{2} = 18, x = 2\frac{1}{2}$

2 a $6x = 54$

b 9

3 a $4x + 16 = 60$

b 11

4 a 12

b 9

c 22

5 \$88.50