5 Formulas

5.1 <u>HKCEE MA 1980(1/1*) – I – 7</u>

Given that $a\left(1+\dfrac{x}{100}\right)=b\left(1-\dfrac{x}{100}\right)$, express x in terms of a and b.

5.2 <u>HKCEE MA 1981(2) – I – 2</u>

If $x=(a+by^2)^{\frac{1}{3}}$, express y in terms of a, b and x.

5.3 <u>HKCEE MA 1993 I – 2(b)</u>

If $2xy+3=6x$, express y in terms of x.

5.4 <u>HKCEE MA 1996 – I – 1</u>

Make r the subject of the formula $h=a+r(1+p^2)$.
If $h=8$, $a=6$ and $p=4$, find the value of r.

5.5 <u>HKCEE MA 1998 – I – 5</u>

Make x the subject of the formula $b=2x+(1-x)a$.

5.6 <u>HKCEE MA 1999 I 2</u>

Make x the subject of the formula $a=b+\dfrac{c}{x}$.

5.7 <u>HKCEE MA 2000 – I – 1</u>

Let $C=\dfrac{5}{9}(F-32)$. If $C=30$, find F.

5.8 <u>HKCEE MA 2001 – I – 6</u>

Make x the subject of the formula $y=\dfrac{1}{2}(x+3)$.
If the value of y is increased by 1, find the corresponding increase in the value of x.

5.9 <u>HKCEE MA 2003 I – 1</u>

Make m the subject of the formula $mx=2(m+c)$.

5.10 <u>HKCEE MA 2004 – I – 2</u>

Make x the subject of the formula $y=\dfrac{2}{a-x}$.

5.11 <u>HKCEE MA 2005 I – 1</u>

Make a the subject of the formula $P=ab+2bc+3ac$.

5.12 <u>HKCEE MA 2007 I – 1</u>

Make p the subject of the formula $5p-7=3(p+q)$.

5.13 <u>HKCEE MA 2008 I – 6</u>

It is given that $\dfrac{2s+t}{s+2t}=\dfrac{3}{4}$.
(a) Express t in terms of s.
(b) If $s+t=959$, find s and t.

5.14 <u>HKCEE MA 2009 – I – 1</u>

Make n the subject of the formula $\dfrac{3n}{2}-\dfrac{5m}{2}=4$.

5.15 <u>HKCEE MA 2010 – I – 5</u>

Consider the formula $3(2c+5d+4)=39d$.
(a) Make c the subject of the above formula.
(b) If the value of d is decreased by 1, how will the value of c be changed?

5.16 <u>HKCEE MA 2011 I 1</u>

Make k the subject of the formula $\dfrac{mk-t}{k+t}=4$.

5.17 <u>HKDSE MA SP – I 2</u>

Make b the subject of the formula $a(b+7)=a+b$.

5.18 <u>HKDSE MA PP – I – 2</u>

Make a the subject of the formula $\dfrac{5+b}{1-a}=3b$.

5.19 <u>HKDSE MA 2012 I – 2</u>

Make a the subject of the formula $\dfrac{3a+b}{8}=b-1$.

5.20 <u>HKDSE MA 2013 I 2</u>

Make k the subject of the formula $\dfrac{3}{h}-\dfrac{1}{k}=2$.

5.21 <u>HKDSE MA 2014 – I – 5</u>

Consider the formula $2(3m+n)=m+7$.
(a) Make n the subject of the above formula.
(b) If the value of m is increased by 2, write down the change in the value of n.

5.22 <u>HKDSE MA 2015 – I – 2</u>

Make b the subject of the formula $\dfrac{4a+5b-7}{b} = 8$.

5.23 <u>HKDSE MA 2016   I   2</u>

Make x the subject of the formula $Ax = (4x+B)C$.

5.24 <u>HKDSE MA 2017 – I – 1</u>

Make y the subject of the formula $k = \dfrac{3x - y}{y}$.

5.25 <u>HKDSE MA 2018 – I – 1</u>

Make b the subject of the formula $\dfrac{a+4}{3} = \dfrac{b+1}{2}$.

5.26 <u>HKDSE MA 2019 – I   1</u>

Make h the subject of the formula $9(h+6k) = 7h+8$.

5 Formulas

5.1 HKCEE MA 1980(1/1*) – I – 7

$$\frac{a(100+x)}{100} = \frac{b(100-x)}{100}$$

$$100a+ax = 100b-bx \implies x = \frac{100(b-a)}{a+b}$$

5.2 HKCEE MA 1981(2) – I – 2

$x^3 = a+by^2$

$$y^2 = \frac{x^3-a}{b} \implies y = \pm\sqrt{\frac{x^3-a}{b}}$$

5.3 HKCEE MA 1993 – I – 2(b)

$$y = \frac{6x-3}{2x}$$

5.4 HKCEE MA 1996 – I – 1

$$r = \frac{h-a}{1+p^2}$$

Hence, $r = \frac{(8)-(6)}{1+(-4)^2} = \frac{2}{17}$

5.5 HKCEE MA 1998 – I – 5

$$x = \frac{b-a}{2-a}$$

5.6 HKCEE MA 1999 – I – 2

$$x = \frac{c}{a-b}$$

5.7 HKCEE MA 2000 – I – 1

$(30) = \frac{5}{9}(F-32) \implies F = 96$

5.8 HKCEE MA 2001 – I – 6

$x = 2y-3$

If $y' = y+1$, $x' = 2y'-3$

$$= 2(y+1)-3 = 2y-1$$

∴ Increase in $x = x'-x = (2y-1)-(2y-3) = 2$

5.9 HKCEE MA 2003 – I – 1

$$m = \frac{2c}{x-2}$$

5.10 HKCEE MA 2004 – I – 2

Method 1 $ay-xy = 2$

$$ay-2 = xy \implies x = \frac{ay-2}{y}$$

Method 2 $a-x = \frac{2}{y}$

$$a = \frac{2}{y}+x \implies x = a-\frac{2}{y}$$

5.11 HKCEE MA 2005 – I – 1

$$a = \frac{P-2bc}{b+3c}$$

5.12 HKCEE MA 2007 – I – 1

$$p = \frac{3q+7}{2}$$

5.13 HKCEE MA 2008 – I – 6

(a) $4(2s+t) = 3(s+2t) \implies t = \frac{5}{2}s$

(b) $s+\left(\frac{5}{2}s\right) = 959 \implies s = 254 \implies t = \frac{5}{2}(254) = 635$

5.14 HKCEE MA 2009 – I – 1

$$n = \frac{8+5m}{3}$$

5.15 HKCEE MA 2010 – I – 5

(a) $c = 4d-2$

(b) $d' = d-1 \implies c' = 4d'-2$

$$= 4(d-1)-2 = 4d-6$$

∴ Change in $c = c'-c = (4d-6)-(4d-2) = -4$

i.e. a decrease of 4.

5.16 HKCEE MA 2011 – I – 1

$$k = \frac{5t}{m-4}$$

5.17 HKDSE MA SP – I – 2

$$b = \frac{6a}{1-a}$$

5.18 HKDSE MA PP – I – 2

$$a = \frac{2b-5}{3b}$$

5.19 HKDSE MA 2012 – I – 2

$$a = \frac{7b-8}{3}$$

5.20 HKDSE MA 2013 – I – 2

$$k = \frac{h}{3-2h}$$

5.21 HKDSE MA 2014 – I – 5

(a) $n = \frac{7-5m}{2}$

(b) $m' = m+2 \implies n' = \frac{7-5m'}{2}$

$$= \frac{7-5(m+2)}{2} = \frac{-3-5m}{2}$$

∴ Change in $n = n'-n = \frac{-3-5m}{2} - \frac{7-5m}{2} = -5$

5.22 HKDSE MA 2015 – I – 2

$$b = \frac{4a-7}{3}$$

5.23 HKDSE MA 2016 – I – 2

$$x = \frac{BC}{A-4C}$$

5.24 HKDSE MA 2017 – I – 1

$$y = \frac{3x}{k+1}$$

5.25 HKDSE MA 2018 – I – 1

$$b = \frac{2a+5}{3}$$

5.26 HKDSE MA 2019 – I – 1

$$h = \frac{8-54k}{2} = 4-27k$$