# PENYELESAIAN LENGKAP

## PRAKTIS 2

### Praktis Formatif

**1** $(w-3)(3w+2) = 3w^2 + 2w - 9w - 6$
$= 3w^2 - 7w - 6$
Jawapan/*Answer*: **A**

**2** (a) $2(3x+4) = 2 \times 3x + 2 \times 4$
$= 6x + 8$
(b) $4(2x-5) = 4 \times 2x - 4 \times 5$
$= 8x - 20$

**3** (a) (i) $x^2$ (ii) $x$
(iii) $2x$ (iv) 2
(b) $(x+2)(x+1) = x^2 + x + 2x + 2$
$= x^2 + 3x + 2$

**4** (a) ✗ (b) ✓
(c) ✗ (d) ✓

**5**

| | | |
|---|---|---|
| (a) | $(2x+7)(2x+3)$ | $6x^2 - 29x + 9$ |
| (b) | $(4x+1)(x-8)$ | $6x^2 + 7x - 10$ |
| (c) | $(3x-1)(2x-9)$ | $4x^2 + 20x + 21$ |
| (d) | $(6x-5)(x+2)$ | $4x^2 - 31x - 8$ |

**6** $(8p)^2 - (3r)^2 - 9r \times p + 9r^2$
$= 64p^2 - 9r^2 - 9pr + 9r^2$
$= 64p^2 - 9pr$

**7** $(2f+3h)^2 - 2(3f-2h)^2$
$= 4f^2 + 12fh + 9h^2 - 2(9f^2 - 12fh + 4h^2)$
$= 4f^2 + 12fh + 9h^2 - 18f^2 + 24fh - 8h^2$
$= -14f^2 + 36fh + h^2$
Jawapan/*Answer*: **A**

**8** Luas kawasan berlorek
*Area of the shaded region*
$= (4x+5)(3x+8) - 2(x+3)$
$= 12x^2 + 32x + 15x + 40 - 2x - 6$
$= (12x^2 + 45x + 34)\ \text{cm}^2$

**9** 5, *x*, *y*, *z*, … ialah suatu jujukan nombor Fibonacci.
5, *x*, *y*, *z*, … *is a sequence of Fibonacci numbers.*
(a) $y = 5 + x$
(b) $z = x + y$
$= x + (5 + x)$
$= 5 + 2x$
(c) $z^2 - y = (5 + 2x)^2 - (5 + x)$
$= 25 + 20x + 4x^2 - 5 - x$
$= 4x^2 + 19x + 20$

**10** $4 - m^2 = (2 - m)(2 + m)$
Jawapan/*Answer*: **B**

**11**

| Ungkapan algebra *Algebraic expression* | Pemfaktoran *Factorisation* |
|---|---|
| (a) $6k + 3$ | $3(2k + 1)$ |
| (b) $y^2 - 9$ | $(y + 3)(y - 3)$ |
| (c) $a^2 - 4ac + 4c^2$ | $(a - 2c)^2$ |
| (d) $3x^2 - 14x + 8$ | $(3x - 2)(x - 4)$ |

**12** $5pr^2 - 20qr^3 = 5(pr^2 - 4qr^3)$
$= 5r^2(p - 4qr)$

**13** (a) $64p^2 + 16 = 16(4p^2 + 1)$
(b) $64p^2 - 16 = 16(4p^2 - 1)$
$= 16(2p + 1)(2p - 1)$

**14** (a)

| | | |
|---|---|---|
| $x$ | $+\ 6$ | $+\ 6x$ |
| $x$ | $+\ 1$ | $+\ 1x$ |
| $x^2$ | $+\ 6$ | $+\ 7x$ |

$x^2 + 7x + 6 = (x + 6)(x + 1)$

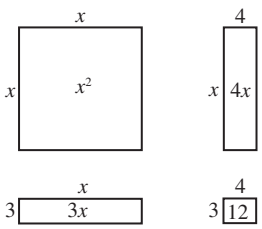
(b)

| | | |
|---|---|---|
| $3x$ | $-\ 2$ | $-\ 2x$ |
| $x$ | $+\ 4$ | $+\ 12x$ |
| $3x^2$ | $-\ 8$ | $+\ 10x$ |

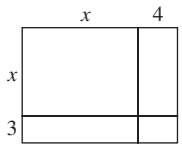
$3x^2 + 10x - 8 = (3x - 2)(x + 4)$

**15** (a) Jumlah harga bagi sebatang pen, sebuah beg dan sehelai baju
*Total price for a pen, a bag and a shirt*
$= (4x - 3) + (3x + 2)^2 + 2(4x - 3)$
$= 4x - 3 + 9x^2 + 12x + 4 + 8x - 6$
$= \text{RM}(9x^2 + 24x - 5)$
(b) $5(4x - 3) = 270$
$20x - 15 = 270$
$20x = 285$
$x = 14.25$
Apabila/*When* $x$ =14.25,
Jumlah harga bagi tiga barang
*Total price for the three goods*
$= \text{RM}[9(14.25)^2 + 24(14.25) - 5]$
$= \text{RM}(1\,827.56 + 342 - 5)$
$= \text{RM}2\,164.56$

**16** (a)

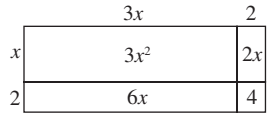



(b)




$x^2 + 7x + 12 = (x + 4)(x + 3)$

**17** (a)




(b) $3x^2 + 8x + 4 = (3x + 2)(x + 2)$

**18** $\frac{4hk}{3k+3} \times \frac{k+1}{4hk+8h} = \frac{4hk}{3(k+1)} \times \frac{k+1}{4h(k+2)}$

$= \frac{k}{3} \times \frac{1}{k+2}$

$= \frac{k}{3(k+2)}$

Jawapan/*Answer*: **C**

**19** (a) $\frac{2y}{9} + \frac{4y}{9} = \frac{6y}{9}$

$= \frac{2y}{3}$

Benar/*True*

(b) $\frac{7u}{12v} + \frac{u}{4v} = \frac{7u + 3u}{12v}$

$= \frac{10u}{12v}$

$= \frac{5u}{6v}$

Palsu/*False*

(c) $\frac{r}{5p} - \frac{5 - 14r}{5p} = \frac{r - (5 - 14r)}{5p}$

$= \frac{r - 5 + 14r}{5p}$

$= \frac{15r - 5}{5p}$

$= \frac{5(3r - 1)}{5p}$

$= \frac{3r - 1}{p}$

Palsu/*False*

(d) $\frac{m+3}{2n} - \frac{m-1}{6n} = \frac{3(m+3) - (m-1)}{6n}$

$= \frac{3m + 9 - m + 1}{6n}$

$= \frac{2m + 10}{6n}$

$= \frac{2(m+5)}{6n}$

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

Benar/*True*

**20** $\frac{1}{p+3} - \frac{3p-8}{p^2+2p-3} = \frac{1}{p+3} - \frac{3p-8}{(p+3)(p-1)}$

$= \frac{(p-1) - (3p-8)}{(p+3)(p-1)}$

$= \frac{p - 1 - 3p + 8}{(p+3)(p-1)}$

$= \frac{7 - 2p}{(p+3)(p-1)}$

**21** (a) $\frac{a}{6c} \times \frac{9c}{ab} = \frac{1}{2} \times \frac{3}{b}$

$= \frac{3}{2b}$ [✓]

(b) $\frac{3}{2hk} \times \frac{h^2m}{k} = \frac{3}{2k} \times \frac{hm}{k}$

$= \frac{3hm}{2k^2}$ [✓]

(c) $\frac{p}{8} \div \frac{4}{p} = \frac{p}{8} \times \frac{p}{4}$

$= \frac{p^2}{32}$ [✗]

(d) $\frac{10v}{u^2} \div \frac{15v^2}{u} = \frac{10v}{u^2} \times \frac{u}{15v^2}$

$= \frac{2}{u} \times \frac{1}{3v}$

$= \frac{2}{3uv}$ [✓]

**22** $\frac{12a^2b^3}{7c^3} \div \frac{2ab^2}{21c^2} = \frac{12a^2b^3}{7c^3} \times \frac{21c^2}{2ab^2}$

$= \frac{6ab}{c} \times \frac{3}{1}$

$= \frac{18ab}{c}$

(a) ✓ (b) ✗

**23** $\frac{18 - 50t^2}{3pt + 6p} \div \frac{24 + 40t}{p^2t + 2p^2} = \frac{18 - 50t^2}{3pt + 6p} \times \frac{p^2t + 2p^2}{24 + 40t}$

$= \frac{2(9 - 25t^2)}{3p(t+2)} \times \frac{p^2(t+2)}{8(3 + 5t)}$

$= \frac{(3 + 5t)(3 - 5t)}{3} \times \frac{p}{4(3 + 5t)}$

$= \frac{3 - 5t}{3} \times \frac{p}{4}$

$= \frac{p(3 - 5t)}{12}$

Jawapan/*Answer*: **A**

**24** (a) $\frac{6}{rs} + \frac{4r}{3} \times \frac{s}{2r^2} = \frac{6}{rs} + \frac{2}{3} \times \frac{s}{r}$

$= \frac{6}{rs} + \frac{2s}{3r}$

$= \frac{18}{3rs} + \frac{2s^2}{3rs}$

$= \frac{18 + 2s^2}{3rs}$

$= \frac{2(9 + s^2)}{3rs}$

(b) $\frac{1}{6} - \frac{x}{4x - 4} \div \frac{3x + 1}{6x - 6} = \frac{1}{6} - \frac{x}{4x - 4} \times \frac{6x - 6}{3x + 1}$

$= \frac{1}{6} - \frac{x}{4(x - 1)} \times \frac{6(x - 1)}{3x + 1}$

$= \frac{1}{6} - \frac{x}{2} \times \frac{3}{3x + 1}$

$= \frac{1}{6} - \frac{3x}{2(3x + 1)}$

$= \frac{(3x + 1) - 9x}{6(3x + 1)}$

$= \frac{1 - 6x}{6(3x + 1)}$

## Praktis Sumatif

**1** $3(7mn + 3k) + 2(5k - 2mn) = 21mn + 9k + 10k - 4mn$

$= 17mn + 19k$

Jawapan/*Answer*: **B**

**2** $(2x - 1)^2 - 4(x + 8) = 4x^2 - 4x + 1 - 4x - 32$

$= 4x^2 - 8x - 31$

Jawapan/*Answer*: **D**

**3** $\frac{3y}{w} - \frac{y - 2}{8w} = \frac{24y - (y - 2)}{8w}$

$= \frac{24y - y + 2}{8w}$

$= \frac{23y + 2}{8w}$

Jawapan/*Answer*: **B**

**4** $\frac{7y}{16x^2 - 1} \times \frac{16xy + 4y}{35x} = \frac{7y}{(4x + 1)(4x - 1)} \times \frac{4y(4x + 1)}{35x}$

$= \frac{y}{4x - 1} \times \frac{4y}{5x}$

$= \frac{4y^2}{5x(4x - 1)}$

Jawapan/*Answer*: **D**

**5** $\frac{6 - k}{k^2} \div \frac{3 + k}{k^3} = \frac{6 - k}{k^2} \times \frac{k^3}{3 + k}$

$= \frac{6 - k}{1} \times \frac{k}{3 + k}$

$= \frac{k(6 - k)}{3 + k}$

Jawapan/*Answer*: **B**

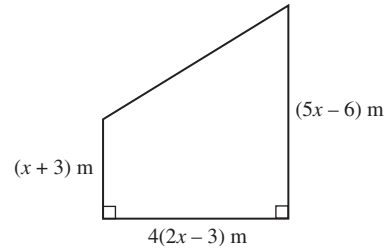
**6** $(6k + 1)(3k - 4) - 4(3 - k)^2$

$= 18k^2 - 24k + 3k - 4 - 4(9 - 6k + k^2)$

$= 18k^2 - 21k - 4 - 36 + 24k - 4k^2$

$= 14k^2 + 3k - 40$

**7**




Luas tanah

*Area of the land*

$= \frac{1}{2}[(x + 3) + (5x - 6)] \times 4(2x - 3)$

$= 2(6x - 3)(2x - 3)$

$= 2(12x^2 - 18x - 6x + 9)$

$= 2(12x^2 - 24x + 9)$

$= (24x^2 - 48x + 18)\ \text{m}^2$

**8** (a) $10r^2 + 15r = 5r(2r + 3)$

(b)

| | | |
|---|---|---|
| $2n$ → | $+1$ | $+n$ |
| $n$ → | $-7$ | $-14n$ |
| $2n^2$ | $-7$ | $-13n$ |

$2n^2 - 13n - 7 = (2n + 1)(n - 7)$

**9**

| | (i) | | (iii) | | (v) | | (vii) |
|---|---|---|---|---|---|---|---|
| Kembangan *Expansion* | $5(k - 2)$ | | $(x + 3)(x - 3)$ | | $(m + 4)^2$ | | $(a - 2b)(3c + d)$ |
| | $= \boxed{5k - 10}$ | *as* | $= \boxed{x^2 - 9}$ | *as* | $= \boxed{m^2 + 8m + 16}$ | *as* | $= \boxed{3ac + ad - 6bc - 2bd}$ |
| Pemfaktoran *Factorisation* | (ii) | | (iv) | | (vi) | | (viii) |
| | $5k - 10$ | | $x^2 - 9$ | | $m^2 + 8m + 16$ | | $3ac + ad - 6bc - 2bd$ |
| | $= \boxed{5(k - 2)}$ | | $= \boxed{(x + 3)(x - 3)}$ | | $= \boxed{(m + 4)^2}$ | | $= \boxed{(a - 2b)(3c + d)}$ |

**10** (a) $3r(2p-5)-p(2p-5)=(2p-5)(3r-p)$

(b) $4xz+8wx-3yz-6wy=(4xz+8wx)-(3yz+6wy)$
$=4x(z+2w)-3y(z+2w)$
$=(z+2w)(4x-3y)$

**11** $\dfrac{1+4p}{3(1+3p)}+\dfrac{1-3p}{6(1-4p)}$
$=\dfrac{2(1+4p)(1-4p)+(1-3p)(1+3p)}{6(1+3p)(1-4p)}$
$=\dfrac{2(1-16p^2)+1-9p^2}{6(1+3p)(1-4p)}$
$=\dfrac{2-32p^2+1-9p^2}{6(1+3p)(1-4p)}$
$=\dfrac{3-41p^2}{6(1+3p)(1-4p)}$

**12** $\dfrac{m+1}{2}\div(m^2-m-2)+\dfrac{2}{m}$
$=\dfrac{m+1}{2}\times\dfrac{1}{m^2-m-2}+\dfrac{2}{m}$
$=\dfrac{m+1}{2}\times\dfrac{1}{(m-2)(m+1)}+\dfrac{2}{m}$
$=\dfrac{1}{2(m-2)}+\dfrac{2}{m}$
$=\dfrac{m+4(m-2)}{2m(m-2)}$
$=\dfrac{m+4m-8}{2m(m-2)}$
$=\dfrac{5m-8}{2m(m-2)}$

**13** $\dfrac{3}{4}-\dfrac{3y^2-y-2}{6y+4}\times\dfrac{5y}{(y-1)^2}$
$=\dfrac{3}{4}-\dfrac{(3y+2)(y-1)}{2(3y+2)}\times\dfrac{5y}{(y-1)^2}$
$=\dfrac{3}{4}-\dfrac{1}{2}\times\dfrac{5y}{y-1}$
$=\dfrac{3}{4}-\dfrac{5y}{2(y-1)}$
$=\dfrac{3(y-1)-10y}{4(y-1)}$
$=\dfrac{3y-3-10y}{4(y-1)}$
$=\dfrac{-7y-3}{4(y-1)}$
$=\dfrac{7y+3}{4(1-y)}$