Penyelesaian Lengkap

Praktis Formatif

1 $\dfrac{BC}{\sin 50°} = \dfrac{7.2}{\sin 67°}$

$BC = 5.992$ cm

2 $\dfrac{\sin \angle PQR}{11} = \dfrac{\sin 38°}{8}$

$\angle PQR = 180° - 57.84°$
$= 122.16°$

3 (a) $\dfrac{\sin \angle PSR}{11} = \dfrac{\sin 70°}{16}$

$\angle PSR = 40.24°$

(b) $\angle PRS = 180° - 26° - 40.24°$
$= 113.76°$

$\dfrac{RS}{\sin 26°} = \dfrac{16}{\sin 113.76°}$

$RS = 7.663$ cm

4 (a) Dalam Rajah (b), sisi bertentangan *BC* kepada ∠*CAB* yang diberi adalah lebih pendek daripada sisi *AC* lain yang diberi.

In Diagram (b), the opposite side BC to the given ∠CAB is shorter than another given side AC.

(b)
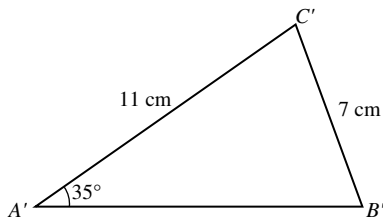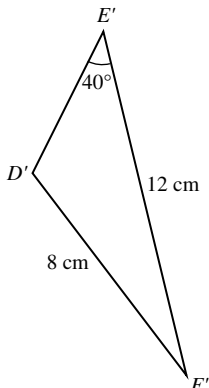

$\dfrac{\sin \angle A'B'C'}{11} = \dfrac{\sin 35°}{7}$

$\angle A'B'C' = 64.33°$

5 (a)

(b) $\dfrac{\sin \angle EDF}{12} = \dfrac{\sin 40°}{8}$

$\angle EDF = 74.62°$
$\angle E'D'F' = 180° - 74.62°$
$= 105.38°$

6 $LM^2 = 5^2 + 8^2 - 2(5)(8)$ kos/*cos* 42°

$LM = 5.436$ cm

7 kos/*cos* $\angle DBA = \dfrac{10^2 + 9^2 - 14^2}{2(10)(9)}$

$\angle DBA = 94.78°$
$\angle DBC = 180° - 94.78°$
$= 85.22°$

8 (a) kos/*cos* $\angle HJK = \dfrac{10^2 + 12^2 - 13^2}{2(10)(12)}$

$\angle HJK = 71.79°$

(b) $HK^2 = 10^2 + 6^2 - 2(10)(6)$ kos/*cos* 71.79°

$HK = 9.925$ cm

9 $x^2 + 5^2 - 2(x)(5)$ kos/*cos* $60° = 7^2$

$x^2 + 25 - 5x = 49$
$x^2 - 5x - 24 = 0$
$(x + 3)(x - 8) = 0$
$x \neq -3, x = 8$

10 (a) $AC^2 = 9^2 + 7^2 - 2(9)(7)$ kos/*cos* 115°

$AC = 13.54$ cm

(b) $\angle ADC = 180° - 115°$
$= 65°$

$\dfrac{CD}{\sin 45°} = \dfrac{13.54}{\sin 65°}$

$CD = 10.56$ cm

11 $\angle XVW = \dfrac{180° - 110°}{2}$
$= 35°$

$\angle UVW = 180° - 60° - 35°$
$= 85°$

$A_{UVW} = \dfrac{1}{2}(3.6)(5.5) \sin 85°$
$= 9.862$ cm^2

12 $\dfrac{1}{2}(15)(17) \sin \angle ABC = 102$

$\angle ABC = 53.13°$
$\angle ABC = 180° - 53.13°$
$= 126.87°$

13 (a) $\dfrac{\sin \angle TRS}{9} = \dfrac{\sin 96°}{10}$

$\angle TRS = 63.52°$

(b) $\angle TSR = 180° - 96° - 63.52°$
$= 20.48°$

$A_{RST} = \dfrac{1}{2}(9)(10)(\sin 20.48°)$
$= 15.74$ cm^2

14 (a) $\frac{1}{2}(5)(BD)\sin 25° = 7.5$

$\qquad\qquad BD = 7.099$ cm

(b) $\angle BDA = 90° - 25°$

$\qquad\quad = 65°$

$\qquad \frac{\sin \angle BAD}{7.099} = \frac{\sin 65°}{9}$

$\qquad\quad \angle BAD = 45.63°$

15 (a) $SU^2 = 7^2 + 4^2 - 2(7)(4) \text{ kos}/cos\ 65°$

$\qquad SU = 6.429$ cm

(b) $s = \frac{5 + 6 + 6.429}{2}$

$\qquad = 8.71$

$\qquad A = \sqrt{(8.71)(3.71)(2.71)(2.281)}$

$\qquad\quad = 14.18$ cm^2

16 (a) $s = \frac{9.5 + 8.5 + 7}{2}$

$\qquad = 12.5$

$\qquad A = \sqrt{12.5(12.5 - 9.5)(12.5 - 8.5)(12.5 - 7)}$

$\qquad\quad = 28.723$ cm^2

$\qquad\quad = 28.72$ cm^2

(b) $A_{XYZ} = \frac{1}{2}(9.5)(8.5) \sin \angle YXZ = 28.723$

$\qquad \angle YXZ = 45.35°$

Atau/*Or*

$\qquad \text{kos}/cos \angle YXZ = \frac{9.5^2 + 8.5^2 - 7^2}{2(9.5)(8.5)}$

$\qquad\qquad \angle YXZ = 45.35°$

17 (a) $AC = \sqrt{6^2 + 8^2}$

$\qquad = 10$ cm

Biar M = jarak serenjang dari titik F ke garis AD

Let M = perpendicular distance from point F to line AD

$AM = 4$ cm, $FM = 5$ cm

$AF = \sqrt{4^2 + 5^2}$

$\quad = \sqrt{41}$ cm

$EC = \sqrt{6^2 + 5^2}$

$\quad = \sqrt{61}$ cm

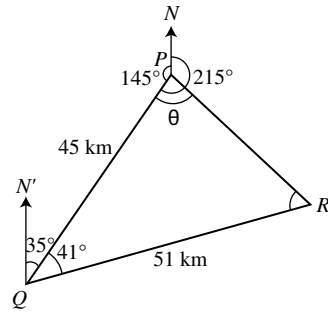$CF = \sqrt{(\sqrt{61})^2 + 4^2}$

$\quad = \sqrt{77}$ cm
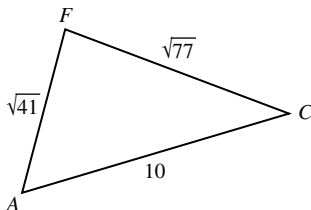
$\quad \text{kos}/cos \angle FAC = \frac{10^2 + (\sqrt{41})^2 - (\sqrt{77})^2}{2(10)(\sqrt{41})}$

$\qquad\qquad \angle FAC = 60.02°$

(b) $A = \frac{1}{2}(10)(\sqrt{41}) \sin 60.02°$

$\qquad = 27.73$ cm^2

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18 (a)

Berdasarkan rajah/*Based on the diagram*,

$\angle NPQ = 360° - 215°$

$\qquad\quad = 145°$

$\angle N'QP = 180° - 145°$

$\qquad\quad = 35°$

$\angle PQR = 76° - 35°$

$\qquad\quad = 41°$

(a) $PR^2 = 45^2 + 51^2 - 2(45)(51) \text{ kos}/cos\ 41°$

$\qquad PR = 34.09$ km

(b) $\frac{\sin \angle QPR}{51} = \frac{\sin 41°}{34.09}$

$\qquad \angle QPR = 78.96°$

Bearing dari pekan P/*Bearing from town P*

$= 215° - 78.96°$

$= 136.04°$

Praktis Sumatif

Kertas 2

1 (a) $s = \frac{3.4 + 4.1 + 5.7}{2}$

$\qquad s = 6.6$

$\qquad A = \sqrt{6.6(6.6 - 3.4)(6.6 - 4.1)(6.6 - 5.7)}$

$\qquad\quad = 6.893$ cm^2

(b) $\frac{1}{2}(3.4)(4.1) \sin \angle BCD = 6.893$

$\qquad\qquad \angle BCD = 180° - 81.48°$

$\qquad\qquad\qquad = 98.52°$

(c) $\angle BAD = 81.48°$

$\qquad \frac{\sin \angle ADB}{4.8} = \frac{\sin 81.48°}{5.7}$

$\qquad\quad \angle ADB = 56.39°$

(d) $\angle ABD = 180° - 81.48° - 56.39°$

$\qquad\quad = 42.13°$

$\qquad AD^2 = 4.8^2 + 5.7^2 - 2(4.8)(5.7) \text{ kos}/cos\ 42.13°$

$\qquad AD = 3.866$ cm

2 (a) $QT^2 = 5^2 + 11^2 - 2(5)(11) \text{ kos}/cos\ 53°$

$\qquad QT = 8.933$ cm

(b) $\frac{\sin \angle PTQ}{5} = \frac{\sin 53°}{8.933}$

$\qquad \angle PTQ = 26.55°$

(c) $\angle TQS = 26.55°$

(Sudut selang-seli/*Alternate angles*)

$\angle QST = 180° - 49° - 26.55°$

$\qquad = 104.45°$

$\frac{\sin 104.45°}{8.933} = \frac{\sin 49°}{QS}$

$\qquad QS = 6.962$ cm

(d) $\frac{1}{2}(5)(11) \sin 53° = 3 \times \frac{1}{2}(4)(6.962) \sin \angle SQR$

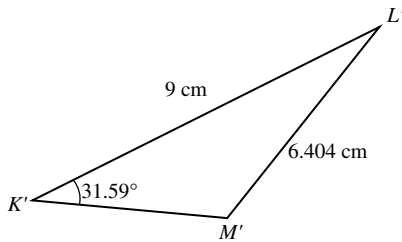$\angle SQR = 31.72°$

3 (a) (i) $s = \frac{5 + 6 + 9}{2}$

$s = 10$

$A = \sqrt{10(10-5)(10-6)(10-9)}$

$= 14.142 \text{ cm}^2$

(ii) $\frac{1}{2}(9)(12) \sin \angle LKM = 2 \times 14.142$

$\angle LKM = 31.59°$

(iii) $LM^2 = 9^2 + 12^2 - 2(9)(12) \text{ kos}/cos\, 31.59°$

$LM = 6.404 \text{ cm}$

(b)

$\frac{\sin \angle K'M'L'}{9} = \frac{\sin 31.59°}{6.404}$

$\angle K'M'L' = 180° - 47.41°$

$= 132.59°$

4 (a) (i) $\text{kos}/cos\, \angle BAC = \frac{8^2 + 10^2 - 7^2}{2(8)(10)}$

$\angle BAC = 44.05°$

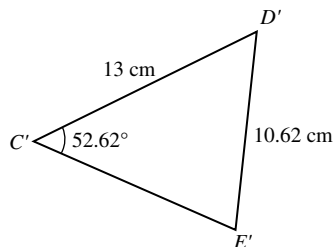(ii) $\frac{\sin \angle ACB}{8} = \frac{\sin 44.05°}{7}$

$\angle ACB = 52.62°$

(iii) $\angle DCE = 52.62°$

$\angle CED = 180° - 24° - 52.62°$

$= 103.38°$

$\frac{DE}{\sin 52.62°} = \frac{13}{\sin 103.38}$

$DE = 10.62 \text{ cm}$

(b) (i)

$\angle C'E'D' = 180° - 103.38°$

$= 76.62°$

$\angle C'D'E' = 180° - 52.62° - 76.62°$

$= 50.76°$

(ii) Luas/Area, $A = \frac{1}{2}(13)(10.62) \sin 50.76°$

$= 53.46 \text{ cm}^2$

5 (a) (i) $s = \frac{x + x + 1 + 7}{2}$

$= x + 4$

$\sqrt{(x+4)(x+4-x)(x+4-x-1)(x+4-7)} = 14\sqrt{6}$

$\sqrt{(x+4)(4)(3)(x-3)} = 14\sqrt{6}$

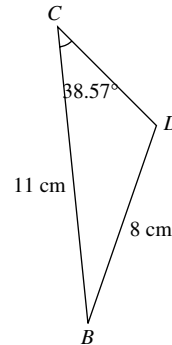$12(x+4)(x-3) = 1176$

$x^2 + x - 12 = 98$

$x^2 + x - 110 = 0$

$(x+11)(x-10) = 0$

$x > 0, x = 10$

(ii) $\frac{1}{2}(10)(11) \sin \angle ABC = 14\sqrt{6}$

$\angle ABC = 38.57°$

(b) (i)

(ii) $\frac{\sin \angle BDC}{11} = \frac{\sin 38.57°}{8}$

$\angle BDC = 180° - 59.01°$

$= 120.99°$

$\angle CBD = 180° - 120.99° - 38.57°$

$= 20.44°$

6 (a) $DB^2 = 9^2 + 16^2 - 2(9)(16) \text{ kos}/cos\, 65°$

$DB = 14.67$

Perimeter $= 9 + 16 + 14.67$

$= 39.67 \text{ m}$

(b) $\frac{\sin \angle ABD}{9} = \frac{\sin 65°}{14.67}$

$\angle ABD = 33.78°$

$\angle DCB = 180° - 33.78° - 40°$

$= 106.22°$

$\frac{DC}{\sin 40°} = \frac{14.67}{\sin 106.22°}$

$DC = 9.821 \text{ m}$

$\angle CDB = 33.78°$

Luas/Area $= \frac{1}{2}(14.67)(9.821) \sin 33.78°$

$= 40.05 \text{ m}^2$

7 (a) $\frac{\sin \angle RTS}{12} = \frac{\sin 75°}{15}$

$\angle RTS = 50.60°$

(b) $\angle TRS = 180° - 75° - 50.60°$

$= 54.40°$

$A_{RST} = \frac{1}{2}(15)(12) \sin 54.40°$

$= 73.18 \text{ cm}^2$

(c) $\quad \frac{1}{2}(12)(TS) \sin 75° = 73.179$

$$TS = 12.63 \text{ cm}$$

(d) Biar M = titik tengah bagi QR/*Let M = midpoint of QR*

$\quad TM = \sqrt{15^2 - 5^2}$

$\qquad = \sqrt{200}$

$\quad SM = \sqrt{12^2 - 5^2}$

$\qquad = \sqrt{119}$

$\quad$ kos/*cos* $\angle TMS = \dfrac{(\sqrt{200})^2 + (\sqrt{119})^2 - 12.63^2}{2(\sqrt{200})(\sqrt{119})}$

$\qquad\qquad \angle TMS = 58.88°$

8 (a) $\quad SU = \sqrt{12^2 + 16^2}$

$\qquad\quad = 20 \text{ cm}$

$\quad SM = \sqrt{15^2 + 8^2}$

$\qquad\quad = 17 \text{ cm}$

$\quad UM = \sqrt{12^2 + 17^2}$

$\qquad\quad = \sqrt{433}$

$\quad s = \dfrac{20 + 17 + \sqrt{433}}{2}$

$\qquad = 28.904$

$A = \sqrt{28.904(28.904 - 20)(28.904 - 17)(28.904 - \sqrt{433})}$

$\quad = 157.484 \text{ cm}^2$

$\quad = 157.5 \text{ cm}^2$ (4 angka bererti/*significant figures*)

(b) $\quad \frac{1}{2}(20)(17) \sin \angle USM = 157.484$

$\qquad\qquad\qquad \angle USM = 67.88°$

$\qquad\qquad\qquad$ atau/*or*

$\quad$ kos/*cos* $\angle USM = \dfrac{20^2 + 17^2 - (\sqrt{433})^2}{2(20)(17)}$

$\qquad\qquad \angle USM = 67.88°$

(c) Biar UN = jarak serenjang dari U ke SM

$\quad$ *Let UN = perpendicular distance from U to SM*

$\quad \sin 67.88° = \dfrac{UN}{20}$

$\qquad\quad UN = 18.53 \text{ cm}$

$\quad$ atau/*or*

$\quad \frac{1}{2}(17)(UN) = 157.484$

$\qquad\qquad UN = 18.53 \text{ cm}$

(d) $\quad \sin \angle UNR = \dfrac{12}{18.53}$

$\qquad\quad \angle UNR = 40.36°$