REGULAR QUIZ 04

Form 2 Regular Course

Angles in Triangle and Polygon

Part A - MC (@2 marks)

1.	D	$\angle BAC = \angle FAE$ (corr.$\angle$s, $\cong \Delta$s) $\angle CAF + 22^\circ = \angle CAF + \angle BAF$ $\angle BAF = 22^\circ$
2.	C	$\angle PRQ = \dfrac{180^\circ - a}{2} = 90^\circ - \dfrac{1}{2}a$ $\angle RPX = 90^\circ - \dfrac{1}{2}a$ $a + 90^\circ - \dfrac{1}{2}a + 64^\circ = 180^\circ$ $a = 52^\circ$
3.	B	$\angle CBE = \dfrac{60^\circ}{2} = 30^\circ$ $\angle CDB = 30^\circ$ $b = 180^\circ - 30^\circ - 60^\circ - 30^\circ = 60^\circ$
4.	A	$2x + 160^\circ - x + 100^\circ + 130^\circ + 2x - 30^\circ = (5-2) \times 180^\circ$ $3x = 180^\circ$ $x = 60^\circ$
5.	B	Let E be an exterior angle. $180^\circ - E - 132^\circ = E$ $E = 24^\circ$ $n = \dfrac{360^\circ}{24^\circ} = 15$
6.	A	$\Delta BAE \cong \Delta BCE$ (RHS)
7.	D	I is correct. $\angle FOH = 5x + 20^\circ$ $5x + 20^\circ + 42^\circ + 104^\circ - 4x = 180^\circ$ $x = 14^\circ$ II is correct. $\angle OEG = 3(14^\circ) = 42^\circ = \angle ODH$ $AB // CD$

		III is correct. $\angle EOG = 5(14°) + 20° = 90°$
8.	B	$g + h + e + f + i + j + (180° - 60°) = 360°$ $g + h + e + f + i + j = 240°$
9.	C	
10.	D	$\angle AED = 180° - \frac{360°}{5} = 108°$ $\angle PQR = 60°$ $x + y + 60° + 108° = 360°$ $x + y = 192$
11.	C	$\angle DYG = \angle EDY = 180° - 108° = 72°$
12.	C	$\frac{360°}{50°} = \frac{36}{5}$ which is not an integer

1.	D	2.	C	3.	B	4.	A	5.	B
6.	A	7.	D	8.	B	9.	C	10.	D
11.	C	12.	C						

Part B - Short Questions (26 marks)

1. $\angle EBD = 90° + c$ (ext. $\angle$ of Δ) 1M

$a + b + \angle EBD = 180°$ ($\angle$ sum of Δ) 1M

$a + b + c = 90°$ 1 f.t.

2. (a) In ΔABC and ΔCDE,

$BC = ED$ (given)

$AB = CD$ (given)

$\angle ABC = \angle CDE = 90°$

$\therefore \Delta ABC \cong \Delta CDE$ (SAS) 1 for reason +1 f.t.

(b) $\angle ECD = \angle BAC$ (corr. sides, $\cong \Delta$s)

$\angle ECD = 55°$

$\angle DEC = \angle ACB = x + 20°$ (corr. sides, $\cong \Delta$s)

$55° + x + y + 20° = 180°$ (adj. $\angle$s on st. line)

$x + y = 105°$ 1A

$x + 20° + 55° = 90°$ ($\angle$ sum of Δ)

$x = 15°$, $y = 90°$ 1A + 1A

3. $\angle ADC + 240° = 360°$ ($\angle$s at a pt.)

$\angle ADC = 120°$

$\angle CAD = 90° - 2x$

$\angle CAD + 120° + x = 180°$ ($\angle$ sum of Δ)

$90° - 2x + 120° + x = 180°$

$x = 30°$ 1A

$\because \angle CAD = 90° - 2x = 30° = \angle ACD$

$\therefore AD = z = DC = 4$ (sides opp. eq. $\angle$s)

$z = 4$ 1A

$\angle BCA = y$ (base $\angle$s, isos. Δ)

$\therefore 2x + 2y = 180°$

$y = 60°$ 1A

4. (a) $\angle TPA = 180° - y$ (adj. $\angle$s on st. line) 1M

$70° + 65° + 45° + 95° + 180° - y = 360°$ (sum of ext. $\angle$s of polygon) 1M

$y = 95°$ 1A

(b) $\because \angle QPT = y = \angle STE = 95°$

$\therefore AQ // DT$ (corr. sides eq.) 1 f.t.

5. (a) Consider ΔACD,

$\angle CAD + \angle ACD + \angle ADC = 180°$ ($\angle$ sum of Δ)

$100° + 40° + 2a = 180°$

$a = 20°$ 1M

$\angle CBE + \angle BCD$

$= 7a + 40°$

$= 7(20°) + 40°$

$= 180°$

$\therefore BE // CD$ (int. $\angle$s, supp.) 1 for reason +1 f.t.

(b) $\angle ABE = \angle ACD = 40°$ (corr. $\angle$s, $BE//CD$) 1M (either)

$\angle AEB = \angle ADC = 2a = 2(20°) = 40°$ (corr. $\angle$s, $BE//CD$) 1M (either)

$\because \angle ABE = \angle AEB$

$\therefore \Delta ABE$ is an isosceles triangle. (sides opp. eq. $\angle$s) 1 f.t.

6. (a) $\angle DEA=\dfrac{(5-2)\times 180°}{5}=108°$ ($\angle$ sum of polygon) 1M

$\angle EDA=\angle EAD$ (base $\angle$s, isos. Δ) 1M

$\angle EAD=\dfrac{180°-108°}{2}=36°$ ($\angle$ sum of Δ) 1A

(b) $\angle HAJ=\angle EAD=36°$ (vert. opp. $\angle$s)

$b=\angle HAJ+25°=36°+25°=61°$ (ext. $\angle$ of Δ)

$b=61°$ 1A

(c) $\angle EAB=108°$ (proved)

$\angle DAB=108°-\angle EAD=108°-36°=72°$ 1A

(d) $\angle HAG=72°$ (vert. opp. $\angle$s)

$a=72°+b=72°+61°=133°$ (ext. $\angle$ of Δ) 1A