Exam style trig equations - Answers (worksheet)

1a) $D = 3 + 1.75 \times \sin(30 \times s)$

$= 3 + 1.75 \times \sin(150)$

$= 3.875$

$\approx 3.9\text{ m}$

b) $-1 < \sin x^\circ < 1$

At $\sin x^\circ = -1$:

$D = 3 + 1.75 \times -1$

$= 3 - 1.75$

$= 1.25\text{m}$

At $\sin x^\circ = 1$:

$D = 3 + 1.75 \times 1$

$= 4.75\text{m}$

The depth of the water is between 1.25m and 4.75m so the maximum difference is 3.5m

2a) $H = 10 + 5 \sin 10$

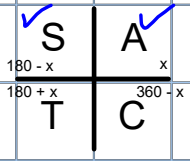
$= 10.9\text{m}$

b) At $H = 12.5\text{m}$:

$12.5 = 10 + 5 \sin t^\circ$

$5 \sin t^\circ = 12.5 - 10 = 2.5$

$\sin t^\circ = 0.5$



$t^\circ = \sin^{-1}(0.5) = 30^\circ$, $180 - 30 = 150^\circ$

The wheel is at 12.5m at 30s and 150s.

Exam style trig equations - Answers

3a) $h = 8 + 4\sin 30$

$= 10m$

b) $10.5 = 8 + 4\sin t°$

S	A
180 - x	x
180 + x	360 - x
T	C

$\sin t° = 0.625$

$t° = \sin^{-1}(0.625) = 39°,\ 180 - 39 = 141°$

Point A is at 10.5m at 39s and 141s.

4. $458 = 320\sin x° + 150$

S	A
180 - x	x
180 + x	360 - x
T	C

$0 \leq x \leq 90$

$\sin x° = 0.9625$

$x° = \sin^{-1}(0.9625) = 74°$

The angle is 74° since $0 \leq x \leq 90$.

5a) $h = 15\tan(25°) + 1.7$

$= 7.3m$

b) $18.4 = 15\tan x° + 1.7$

S	A
180 - x	x
180 + x	360 - x
T	C

$0 \leq x \leq 90$

$\tan x° = 1.113$

$x° = \tan^{-1}(1.13) = 48°$

The angle of elevation is 48° when the lift is 18.4m above the ground.