

7.4 Answers

7.4.1 Solutions to the Introductory Example

(i)

$$V_{max} \propto \sqrt{LWL} \Leftrightarrow V_{max} = k\sqrt{LWL}$$

(ii) $k = 1.34$

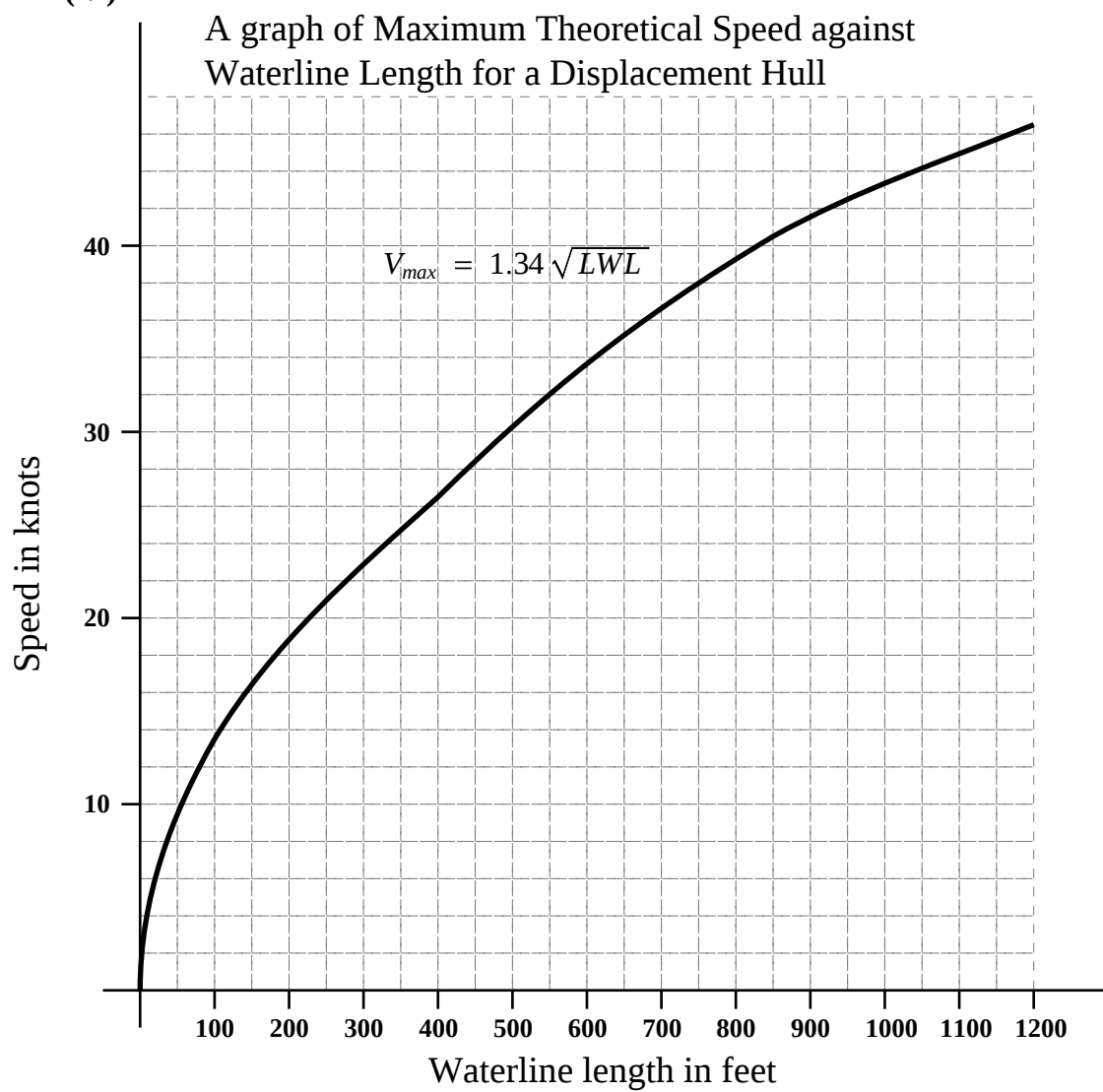
(iii)

$$V_{max} = 1.34\sqrt{LWL}$$

(iv)

LWL	0	100	400	900	1200
V_{max}	0	13.4	26.8	40.2	46.4

(v)



7.4.2 Solutions to 7.2 Exercise

Answer 1

(i)

$$C \propto N \Leftrightarrow C = kN$$

(ii) $k = 0.2$

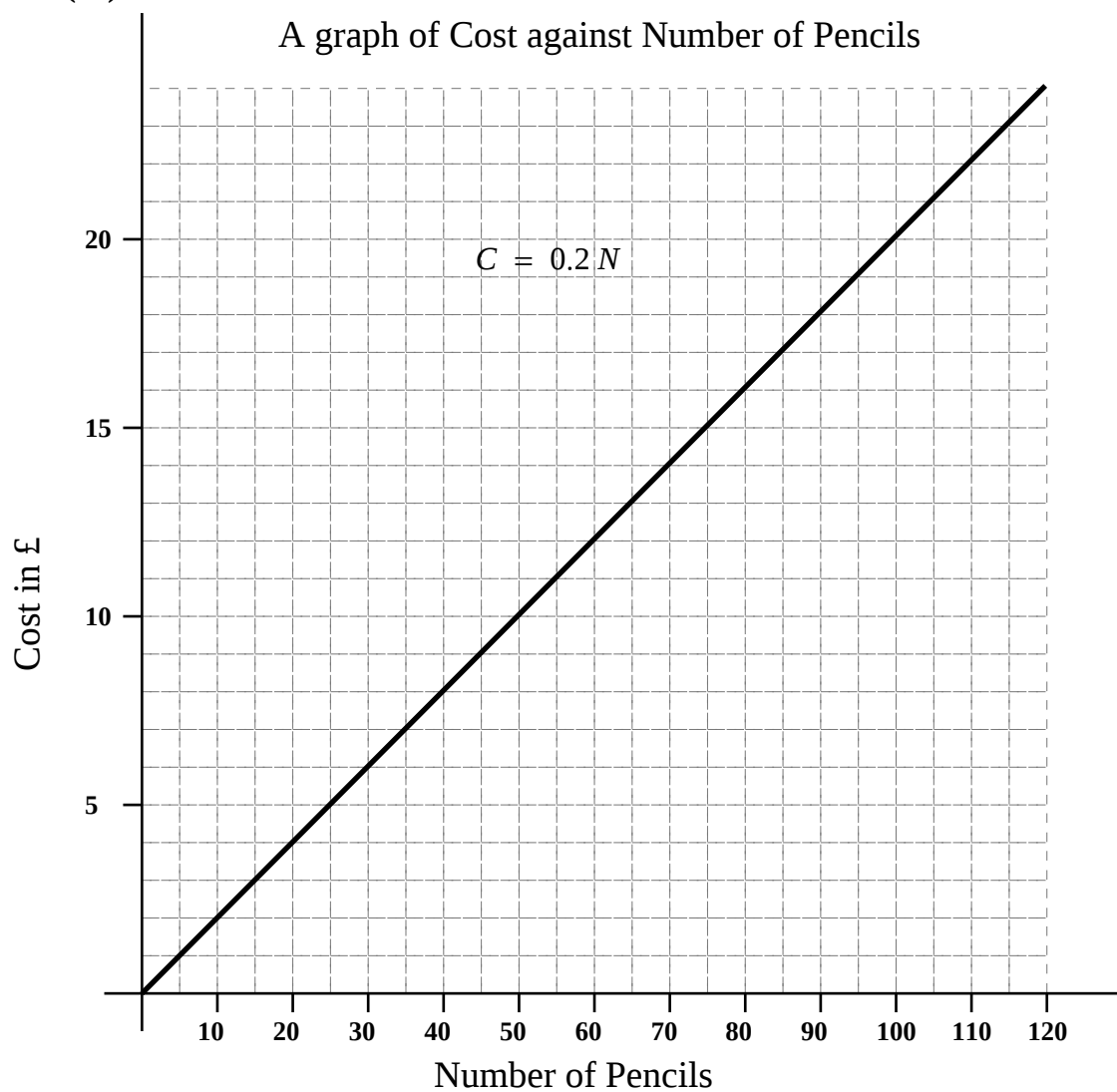
(iii)

$$C = 0.2N$$

(iv)

N	0	10	40	90	120
C	0	2	8	18	24

(v)



Answer 2**(i)**

$$p \propto r^2 \Leftrightarrow p = k r^2$$

(ii)

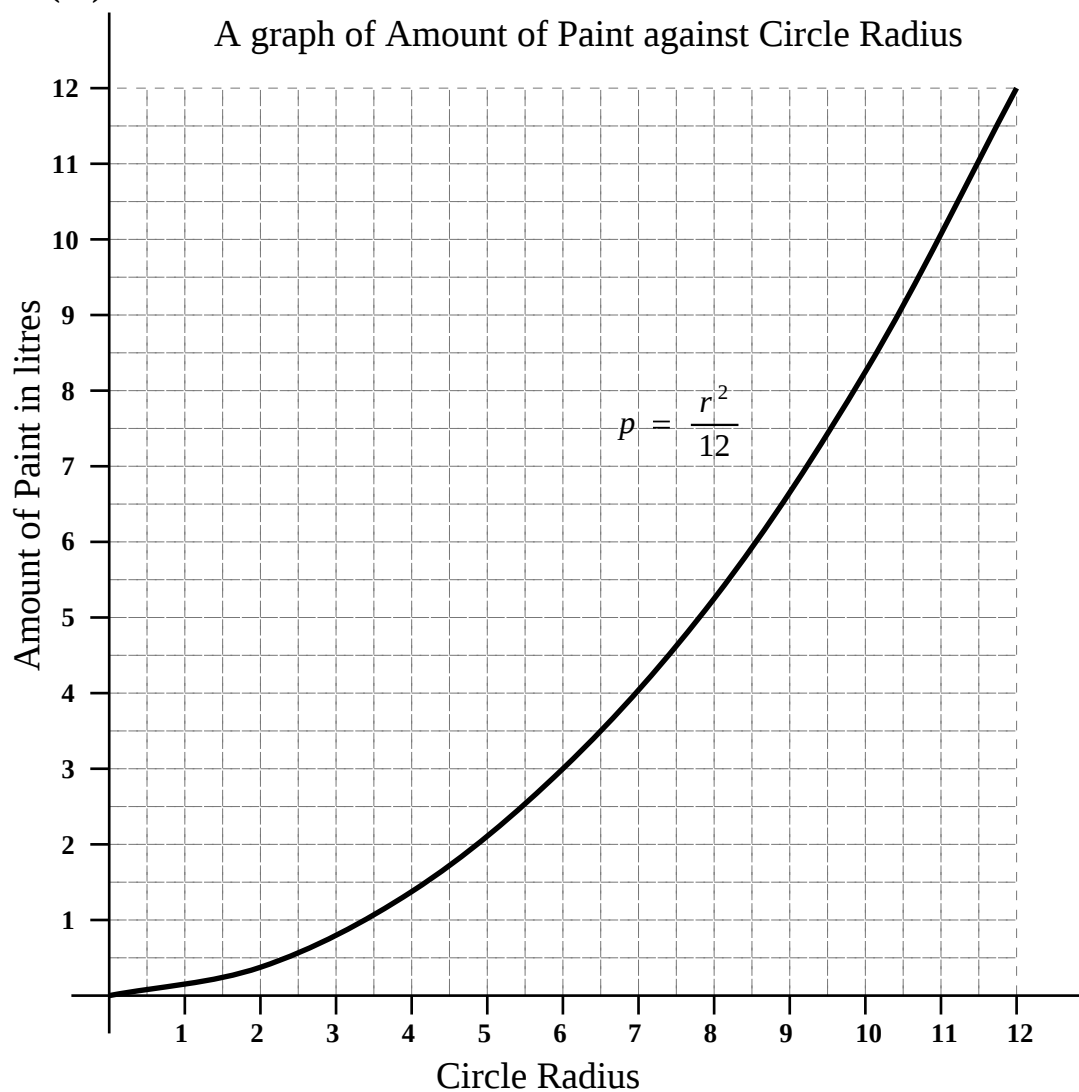
$$k = \frac{1}{12}$$

(iii)

$$p = \frac{r^2}{12} \quad \text{or} \quad p = 0.8333... r^2$$

(iv)

r	0	2	4	6	8	10	12
p	0	$\frac{1}{3}$	$1\frac{1}{3}$	3	$5\frac{1}{3}$	$8\frac{1}{3}$	12

(v)

Answer 3**(i)**

$$P \propto \frac{1}{D^2} \Leftrightarrow P = \frac{k}{D^2}$$

(ii)

$$k = 960$$

(iii)

$$P = \frac{960}{D^2}$$

(iv)

D	2	4	6	8	10	12
P	240	60	$26\frac{2}{3}$	15	9.6	$6\frac{2}{3}$

(v)