

1 (a) Work out the following.

$$(i) \frac{1}{0.2^2} = \frac{1}{0.04} = 25$$

Answer(a)(i) 25 [1]

$$(ii) \sqrt{5.1^2 + 4 \times 7.3^2} = \sqrt{239.17} \\ = \sqrt{26.01 + 4 \times 53.29} = 15.465122049... \\ = \sqrt{26.01 + 213.16} \approx 15.5$$

Answer(a)(ii) 15.5 [1]

$$(iii) 25^{\frac{1}{2}} \times 1000^{-\frac{2}{3}} \\ = (5^2)^{\frac{1}{2}} \times (10^3)^{-\frac{2}{3}} \\ = 5 \times 10^{-2} \\ = 0.05$$

Answer(a)(iii) 0.05 [2]

(b) Mia invests \$7500 at 3.5% per year **simple** interest.
Calculate the total amount she has after 5 years.

$$\text{Interest} = \$7500 \times \frac{3.5}{100} \times 5 \\ = \$1312.5$$

$$\text{Total} = \$7500 + \$1312.5 \\ = \$8812.50$$

Answer(b) \$ 8812.50 [3]

(c) Written as the product of prime factors $48 = 2^4 \times 3$.

(i) Write 60 as the product of prime factors.

$$60 = 2^2 \times 3 \times 5$$

Handwritten factor tree for 60:
60 is divided by 2 to get 30.
30 is divided by 2 to get 15.
15 is divided by 3 to get 5.
5 is a prime number.

Answer(c)(i) $2^2 \times 3 \times 5$ [2]

(ii) Work out the highest common factor (HCF) of 48 and 60.

	48	60
✓ 2	24	30
✓ 2	12	15
✓ 3	4	5
2	2	5
2	1	5
5	1	1

$$\text{HCF} = 2 \times 2 \times 3 = 12$$

Answer(c)(ii) 12 [2]

(iii) Work out the lowest common multiple (LCM) of 48 and 60.

$$\text{LCM} = 2 \times 2 \times 3 \times 2 \times 2 \times 5 \\ = 240$$

Answer(c)(iii) 240 [2]