



CAMI Mathematics: Grade 10

GRADE 10 CAPS Curriculum

10.4 Algebraic expressions (A)

1.1 Indicate in the table whether the following numbers are rational or irrational.

1.2

NUMBER	Rational	Irrational
10.586784..	x	√
70		
114		
1.23232..		
$(-12)^2$		
3.92		
$\sqrt{19}$		
1 235 100		
$\sqrt{256}$		

1.2 Arrange the following surds in descending order.

1.2.1 $\sqrt[4]{2}$ and $\sqrt[3]{6}$

1.2.2 $\sqrt[4]{5}$ and $\sqrt[3]{2}$

1.2.3 $\sqrt{7}$ and $\sqrt[4]{2}$

1.2.4 $\sqrt[3]{2}$ and $\sqrt[3]{3}$

1.2.5 $\sqrt[3]{3}$ and $\sqrt{5}$

1.3 Round real numbers to an appropriate degree of accuracy.

Round off to nearest:	Hundred	Tens	Unit	Tenth	Hundredth	Thousandth
87.5648						
125.0254						
255.0258						
155.0002						
256.9956						
215.6623						
203.5580						
99.23659						
154.8545						



CAMI Mathematics: Grade 10

1.4 Multiplication of a binomial by a trinomial.

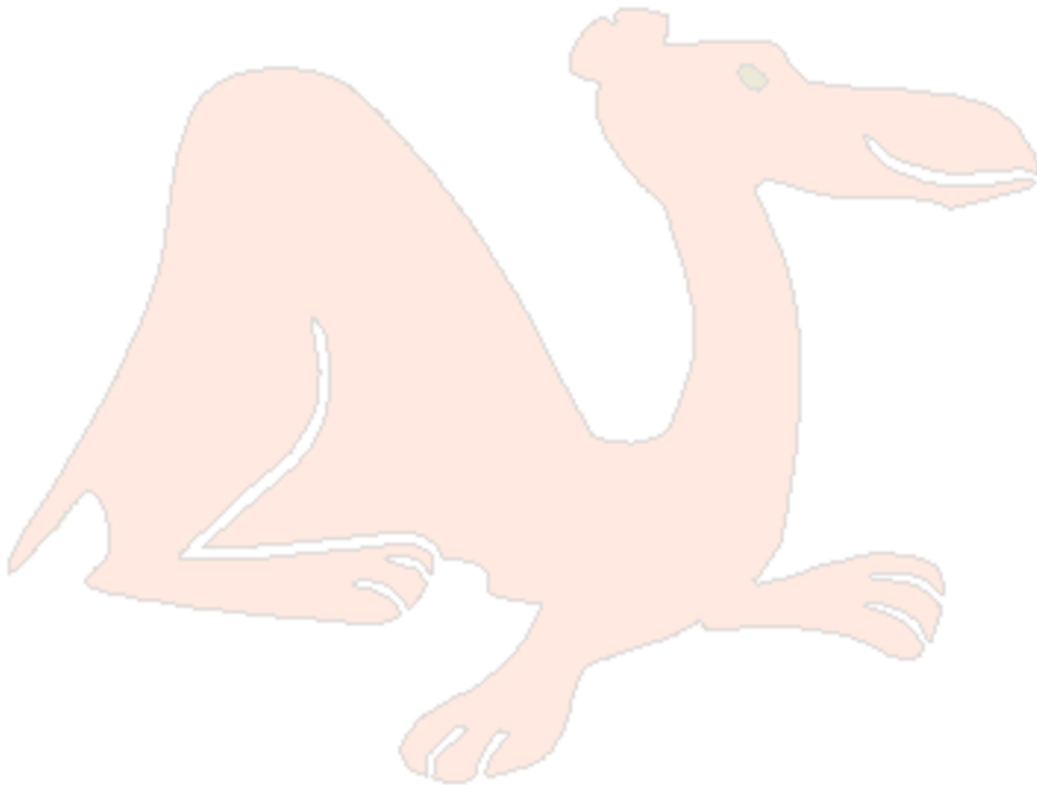
1.4.1 $(4p - 2)(5p^2 + 3p + 3)$

1.4.2 $(-4f - 5)(-5f^2 - 4f + 2)$

1.4.3 $(2n + 4)(4n^2 - 8n + 16)$

1.4.4 $(2e + 3m)(4e^2 - 6em + 9m^2)$

1.4.5 $(4y - 3z)(16y^2 + 12yz + 9z^2)$





CAMI Mathematics: Grade 10

MEMO

1.1 Understand that real numbers can be rational and irrational. [1.8.6.1; 1.8.6.2; 1.8.6.3]

NUMBER	Rational	Irrational
10.586784..	x	✓
70	✓	x
114	✓	x
1.23232..	✓	x
$(-12)^2$	✓	x
3.92	✓	x
$\sqrt{19}$	x	✓
1 235 100	✓	x
$\sqrt{256}$	✓	x

1.2 Arrange the following surds in descending order. [4.3.5.7; 4.3.5.8]

1.2.1 $\sqrt[4]{2}$ and $\sqrt[3]{6}$

$$\sqrt[4]{2} = 2^{\frac{1}{4}} = 2^{\frac{3}{12}} = (2^3)^{\frac{1}{12}} = (8)^{\frac{1}{12}}$$

$$\sqrt[3]{6} = 6^{\frac{1}{3}} = 6^{\frac{4}{12}} = (6^4)^{\frac{1}{12}} = (1296)^{\frac{1}{12}}$$

$$\text{Thus, } (1296)^{\frac{1}{12}} > 8^{\frac{1}{12}}$$

1.2.2 $\sqrt[4]{5}$ and $\sqrt[3]{2}$

$$\sqrt[4]{5} = 5^{\frac{1}{4}} = 5^{\frac{3}{12}} = (5^3)^{\frac{1}{12}} = 125^{\frac{1}{12}}$$

$$\sqrt[3]{2} = 2^{\frac{1}{3}} = 2^{\frac{4}{12}} = (2^4)^{\frac{1}{12}} = 16^{\frac{1}{12}}$$

$$\text{Thus, } 125^{\frac{1}{12}} > 16^{\frac{1}{12}}$$

1.2.3 $\sqrt{7}$ and $\sqrt[4]{2}$

$$\sqrt{7} = 7^{\frac{1}{2}} = 7^{\frac{2}{4}} = (7^2)^{\frac{1}{4}} = 49^{\frac{1}{4}}$$

$$\sqrt[4]{2} = 2^{\frac{1}{4}} = (2)^{\frac{1}{4}} = 2^{\frac{1}{4}}$$



CAMI Mathematics: Grade 10

Thus, $49^{\frac{1}{4}} > 2^{\frac{1}{4}}$

1.2.4 $\sqrt[3]{2}$ and $\sqrt[3]{3}$

$$\sqrt[3]{2} = 2^{\frac{1}{3}}$$

$$\sqrt[3]{3} = 3^{\frac{1}{3}}$$

Thus, $3^{\frac{1}{3}} > 2^{\frac{1}{3}}$

1.2.5 $\sqrt[3]{3}$ and $\sqrt{5}$

$$\sqrt[3]{3} = 3^{\frac{1}{3}} = 3^{\frac{2}{6}} = (3^2)^{\frac{1}{6}} = 9^{\frac{1}{6}}$$

$$\sqrt{5} = 5^{\frac{1}{2}} = 5^{\frac{3}{6}} = (5^3)^{\frac{1}{6}} = 125^{\frac{1}{6}}$$

Thus, $125^{\frac{1}{6}} > 9^{\frac{1}{6}}$

1.3 Round real numbers to an appropriate degree of accuracy. [2.3.3.4; 2.3.3.5]

Round off to nearest:	Hundred	Tens	Unit	Tenth	Hundredth	Thousandth
87.5648	100	90	88	87.6	87.56	87.564
125.0254	100	130	125	125.0	125.03	125.025
255.0258	300	260	255	255.0	255.03	255.026
155.0002	200	160	155	155.0	155.00	155.000
256.9956	300	260	257	257.0	257.00	256.996
215.6623	200	220	257	215.7	215.66	215.662
203.5580	200	200	204	203.6	203.56	203.558
99.23659	100	100	99	99.2	99.24	99.237
154.8545	200	150	155	154.9	154.85	154.855

1.4 Multiplication of a binomial by a trinomial. [4.4.7.1; 4.4.7.2; 4.4.7.3]

$$\begin{aligned} 1.4.1 \quad & (4p - 2)(5p^2 + 3p + 3) \\ & = 20p^3 + 12p^2 + 12p - 10p^2 - 6p - 6 \\ & = 20p^3 + 2p^2 + 6p - 6 \end{aligned}$$



CAMI Mathematics: Grade 10

$$\begin{aligned}1.4.2 \quad & (-4f - 5)(-5f^2 - 4f + 2) \\ & = 20f^3 + 16f^2 - 8f + 25f^3 + 20f - 10 \\ & = 20f^3 + 41f^2 + 12f - 10\end{aligned}$$

$$\begin{aligned}1.4.3 \quad & (2n + 4)(4n^2 - 8n + 16) \\ & = 8n^3 - 16n^2 + 32n + 16n^2 - 32n + 64 \\ & = 8n^3 + 64\end{aligned}$$

$$\begin{aligned}1.4.4 \quad & (2e + 3m)(4e^2 - 6em + 9m^2) \\ & = 8e^3 - 12e^2m + 18em^2 + 12e^2m - 18em^2 + 27m^3 \\ & = 8e^3 + 27m^3\end{aligned}$$

$$\begin{aligned}1.4.5 \quad & (4y - 3z)(16y^2 + 12yz + 9z^2) \\ & = 64y^3 + 48y^2z + 36yz^2 - 48y^2z - 36yz^2 - 27z^3 \\ & = 64y^3 - 27z^3\end{aligned}$$

