Binomial Theorem Ex 18.2 Q37

$$\left(\frac{p}{2}+2\right)^8$$

$$\binom{8}{4}\left(\frac{p}{2}\right)^4 2^4 = 1120$$

$$70p^4 = 1120$$

$$p^4 = 16$$

$$p = 2$$

Binomial Theorem Ex 18.2 Q38

$$\left(\sqrt[3]{2}+\frac{1}{\sqrt[3]{3}}\right)^n$$

$$7th\,term\ \ from\ begining\,is$$

$$\binom{n}{6}\left(\sqrt[3]{2}\right)^{n-6}\left(\frac{1}{\sqrt[3]{3}}\right)^6$$

$$7th\,term\ \ from\ end\,is$$

$$\binom{n}{n-6}\left(\sqrt[3]{2}\right)^{6}\left(\frac{1}{\sqrt[3]{3}}\right)^{n-6}$$

$$Given\ \frac{7th\,term\ \ from\ begining}{7th\,term\ \ from\ end} = \frac{\binom{n}{6}\left(\sqrt[3]{2}\right)^{n-12}\left(\frac{1}{\sqrt[3]{3}}\right)^{12-n}}{\binom{n}{n-6}}$$

$$= \frac{\binom{n}{6}\left(\sqrt[3]{2}\right)^{n-12}\left(\sqrt[3]{3}\right)^{n-12}}{\binom{n}{n-6}}$$

$$= \frac{\binom{n}{6}(6)^{\frac{n-12}{3}}}{\binom{n}{n-6}} = \frac{1}{6}$$

$$\frac{n-12}{3} = -1$$

$$n = 12-3 = 9$$

Binomial Theorem Ex 18.2 Q39

Seventh term from the beginning and end in the binomial expansion of $\left(\sqrt[3]{2}+\frac{1}{\sqrt[3]{2}}\right)^n$ are equal,

$\Rightarrow T_7 = T_{n-6}$

$\Rightarrow {}^nC_6\left(\sqrt[3]{2}\right)^6\left(\frac{1}{\sqrt[3]{2}}\right)^{n-6} = {}^nC_{n-6}\left(\sqrt[3]{2}\right)^{n-6}\left(\frac{1}{\sqrt[3]{2}}\right)^6$

$\Rightarrow \left(\sqrt[3]{2}\right)^6\left(\frac{1}{\sqrt[3]{2}}\right)^{n-6} = \left(\sqrt[3]{2}\right)^{n-6}\left(\frac{1}{\sqrt[3]{2}}\right)^6$

$\Rightarrow \left(\frac{1}{\sqrt[3]{2}}\right)^{2n-12} = \left(\frac{1}{\sqrt[3]{2}}\right)^{12}$

$\Rightarrow 2n - 12 = 12$

$\Rightarrow n = 12$

********** END **********