Sample math symbols

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Contents

Chapter 1

Single equations

Add a squared and b squared to get c squared. Or, using the more mathematical approach: $a^2 + b^2 = c^2$

TEX is pronouned as $\tau\epsilon\chi$

100 m^3 of water

This comes from my *heartsuit*

Add a squared and b squared to get c squared. Or, using the more mathematical approach:

$$a^2 + b^2 = c^2 \tag{1.1}$$

Einstein says

$$E = mc^2 \tag{1.2}$$

He didn't say

$$1 + 1 = 3 \tag{bollocks}$$

This is a reference to (1.2).

Add a squared to b squared to get c squared. Or, using a more mathematical approach

$$a^2 + b^2 = c^2$$

or you can type less for the same effect

$$a^2 + b^2 = c^2$$

This is text style: $\lim_{n \to \infty} \sum_{k=1}^n \frac{1}{k^2} = \frac{\pi^2}{6}$. And this is the display style:

$$\lim_{n \to \infty} \sum_{k=1}^n \frac{1}{k^2} = \frac{\pi^2}{6} \tag{1.3}$$

A $d_{e_{e_p}}$ mathematical expression followed by a $h_{i_{g_h}}$ expression. As opposed to a smashed $d_{e_{e_p}}$ expression followed by a $h_{i_{g_h}}$ expression.

$\forall x \in \mathbf{R}: \qquad x^2 \geq 0$

$x^2 \geq 0 \qquad \text{for all } x \in \mathbf{R}$

$x^2 \geq 0 \qquad \text{for all } x \in \mathbb{R}$

$\boxed{p_{ij}^3 \qquad m_{\text{Knuth}} \qquad \sum_{k=1}^n k \qquad \mathrm{a}^x + y \neq a^{x+y} \qquad e^{x^2} \neq e^{x2}}$

$\sqrt{2} \Leftrightarrow x^{1/2} \quad \sqrt[3]{2} \quad \sqrt{x^2 + \sqrt{y}} \quad \sqrt{x^2} + y^2$

$\Psi = v_1 \cdot v_2 \cdot \ldots \qquad n! = 1 \cdot 2 \cdots (n-1) \cdot n$

$0.\overline{3} = \underline{\underline{1/3}}$

$\boxed{\underbrace{\overbrace{a+b+c}^{6} \cdot \overbrace{d+e+f}^{9}}_{\text{Advanced Calculus}} = 54}$

$f(x) = x^2 \quad f'(x) = 2x \quad f''(x) = 2$

$\hat{XY} \quad \widehat{XY} \quad \bar{x}_0 \quad \bar{x_0}$
$\vec{a} \quad \vec{AB} \quad \overrightarrow{AB}$

$$lim_{x \to 0} \frac{\sin x}{x} = 1$$

$$\text{JamesComey} = \text{nutjob}_{x=D.Trump}$$

$a \bmod b$
$x \equiv a \pmod{b}$

In in-line equations, the fraction $\frac{1}{2}$(text style) is shrunk to fit the line. The reverse of which is $\dfrac{1}{2}$(display style). A built-in fraction is $\tfrac{1}{2}$

$$\sqrt{\frac{x^2}{k+1}} \qquad x^{\frac{2}{k+1}} \qquad \frac{\partial^2 f}{\partial x^2}$$

Pascal's rule is

$$\binom{n}{k} = \binom{n-1}{k} + \binom{n-1}{k-1}$$

$$f_n(x) \stackrel{d}{\succ} f_m(x)$$

$$\int_0^{\frac{\pi}{2}} x^2 \, \mathrm{d}x \qquad \sum_{i=1}^n i \qquad \prod_\epsilon$$

$$\sum_{\substack{0<i<n \\ j \subseteq i}}^n P(i,j) = Q(i,j)$$

$$a, b, c \neq \{a, b, c\}$$

$$1 + \left(\frac{1}{1-x^2}\right)^3 \qquad \ddagger - \Big)$$

$$\Big((x+1)(x-1)\Big)^3$$

$$(\big(\Big(\bigg(\quad \} \big\} \Big\} \bigg\} \quad \| \big\| \Big\| \bigg\| \quad \Updownarrow \big\Updownarrow \Big\Updownarrow \bigg\Updownarrow$$

$$\begin{multline} a+b+c+d+e+f+g+h+i+z+x+v+n+m+1+2+3+4 \\ = j+k+l+m+n \tag{1.4} \end{multline}$$

Chapter 2

Multiple equations

align env

$$\begin{aligned} a &= b + c \tag{2.1}\\ &= d + e \tag{2.2}\end{aligned}$$

$$\begin{aligned} a &= b + c \tag{2.3}\\ &= d + e \tag{2.4}\end{aligned}$$

Interpretation: & is more standard in the use of system of equations.
Its downfall:

$$\begin{aligned} a &= b + c \tag{2.5}\\ &= d + e + f + g + h + j + j + u + j + k + s + c \\ &+ c + r + e + g + t + y + z \tag{2.6}\\ &= p + q + r + s \tag{2.7}\end{aligned}$$

A better solution:

$$\begin{aligned} a \quad &= \quad b + c \tag{2.8}\\ &= \quad d + e + g + r + h + j + j + k \\ & \quad\quad + l + b + m + v + v + c + f + h \tag{2.9}\\ &= \quad p + q + r + s \tag{2.10}\end{aligned}$$

There are two troubles:
Trouble I:

$$a \quad = \quad a = a \tag{2.11}$$

Trouble II:(the spacing between j^2 is big!)

$$\begin{aligned} a \quad &= \quad b + c \tag{2.12}\\ &= \quad z + x + v + n + o + m + n + b + t + r + e + t + i^2 + j^2 + \tag{2.13}\end{aligned}$$

In addtionally, we are provided with \lefteqn when the LHS is too long:

$$
\begin{aligned}
&a+b+c+r+e+d+f+g+d+e+t+f+g+h+d \\
&\quad = \quad a+b+c+m+j+k \qquad (2.14) \\
&\quad = \quad n+o+p+q+r+s \qquad (2.15)
\end{aligned}
$$

However, this still sucks as the RHS is too short and the array is not properly centered:

$$
\begin{aligned}
a+b+c+e+f+g+h+j+k+l & \qquad (2.16) \\
= \quad r+s & \qquad (2.17)
\end{aligned}
$$

Our new remedy will be ...

2.1 IEEEeqnarray Environment

$$
\begin{aligned}
a &= b+c && (2.18) \\
&= d+e+f+b+t+g+h \\
&\quad +j+k+l && (2.19) \\
&= p+q+r+s && (2.20)
\end{aligned}
$$

Addtional spaces can be added with . and /and ? in an increasing order. We now show how IEEEeqnarray solves (2.13) and (2.17).