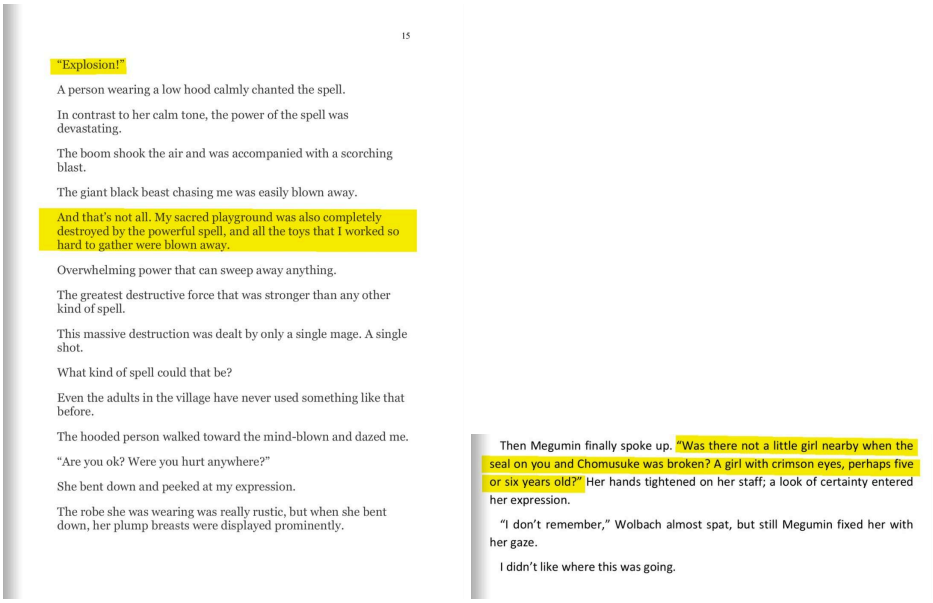
Despite the shockwave of Wolbach's Explosion and the destruction of her toys and the "sacred" playground that she worked so hard for, Megumin was not fazed in the slightest-a true marvel for a child. The child would be sad; with such destruction, Megumin should be calm, which again is quite remarkable for a child.



15

"Explosion!"

A person wearing a low hood calmly chanted the spell.

In contrast to her calm tone, the power of the spell was devastating.

The boom shook the air and was accompanied with a scorching blast.

The giant black beast chasing me was easily blown away.

And that's not all. My sacred playground was also completely destroyed by the powerful spell, and all the toys that I worked so hard to gather were blown away.

Overwhelming power that can sweep away anything.

The greatest destructive force that was stronger than any other kind of spell.

This massive destruction was dealt by only a single mage. A single shot.

What kind of spell could that be?

Even the adults in the village have never used something like that before.

The hooded person walked toward the mind-blown and dazed me.

"Are you ok? Were you hurt anywhere?"

She bent down and peeked at my expression.

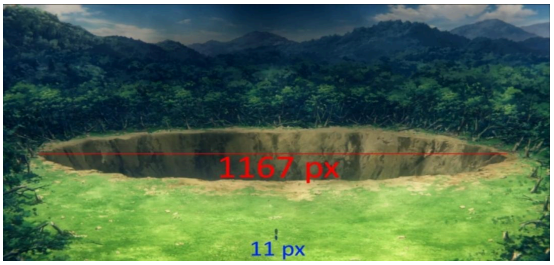
The robe she was wearing was really rustic, but when she bent down, her plump breasts were displayed prominently.

Then Megumin finally spoke up. "Was there not a little girl nearby when the seal on you and Chomusuke was broken? A girl with crimson eyes, perhaps five or six years old?" Her hands tightened on her staff; a look of certainty entered her expression.

"I don't remember," Wolbach almost spat, but still Megumin fixed her with her gaze.

I didn't like where this was going.

To give a better understanding of the power of the explosion, here are the calculations based on the size of the crater.



Diameter of Crater Calculation:

A 5-year-old Japanese girl measures about 106.2 cm tall (1.062 meters).

5 year-old	cm	feet	SD	kg	
0 months	106.2	3' 6"	4.2	17.4	

The ratio of 1.062 meters to 11 pixels (taken from an image or scale) is 0.0965 meters per pixel.

The diameter of the crater can then be determined by multiplying the pixel measurement, 1167 pixels, by the meter-to-pixel ratio:

Crater Diameter = 0.09654545454 * 1167 = 112.67 meters.

Next, we will determine the explosive yield using two different calculations:

Method 1: Standard Explosion Formula

Here, we apply the formula for explosion yield as a function of the radius of the explosion. First, we determine the radius of the explosion by dividing the diameter by 2:

Radius = 112.67 / 2 = 56.33 meters.
Using the formula for the yield of an explosion:

$W = R^3 \times ((27136 \times P + 8649)^{(1/2)} / 13568 - 93 / 13568)^2$

Where:

W is the yield in tons of TNT,
R is the radius in meters (56.33 meters),
P is the shockwave pressure in bars (we use a typical value of 1.37895 bars or 20 psi).
Plugging in the values:

$W = (56.33)^3 \times ((27136 \times 1.37895 + 8649)^{(1/2)} / 13568 - 93 / 13568)^2$

This calculation gives us 14.37 tons of TNT, which would classify this as a 8-B level explosion. This is likely a significant lowball estimate, as we'll see in the next method.

Method 2: Considering the Crater as a Half Sphere
First, consider the crater as a half-sphere. To find the volume, we apply the formula of the volume of a sphere and divide by 2:

$V = (4/3) * \pi * r^3$

Substituting the value of the radius as 56.33 meters, the volume of the full sphere will be:

$V = (4/3) * \pi * (56.33)^3 = 748{,}870.44\ m^3$.

Since we are considering the crater as a half-sphere, we divide this value by 2:

Volume of half sphere = 748,870.44 / 2 = 374,435.22 m^3.

Now, to convert this volume into cubic centimeters (cm^3), we multiply by 1,000,000 (since 1 m^3 = 1,000,000 cm^3):

Volume in cm^3 = 374,435,217,500 cm^3.

Next, we compute the energy required for pulverization and vaporization.

Pulverization energy: 214 J/cc,

Vaporization energy: 25,700 J/cc.
Pulverization Energy:
Energy = 374,435,217,500 × 214 J = 8.01×10^{13} Joules = 19.15 kilotons of TNT-7-C level.

Vaporization Energy:
Energy = 374,435,217,500 × 25,700 J = 9.62×10^{15} Joules = 2.30 megatons of TNT.

Conclusion:
From the above considerations, the yield of this explosion varies from 19.15 kilotons to 2.30 megatons, both extremely powerful values.

Yet, even with such destruction and overwhelming force of the explosion, Megumin remained emotionally unscathed, which, for a child of her age, was an extraordinary amount of emotional management. The composure she showed despite chaos and an overwhelming situation brought out her resilience and maturity in handling intense emotional stress.