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**Bolesławiecki Konkurs Matematyczny dla klas II liceum i klas III technikum**

**Etap szkolny**

**8.01.2025 r. godz.** ..............

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**Zadanie 1.**

Uzasadnij, że dla każdego $n\in N $ wyrażenie $\frac{n^{4}}{4}+\frac{n^{3}}{2}+\frac{n^{2}}{4}$ jest kwadratem liczby naturalnej.

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**Zadanie 2.**

Ile naturalnych dzielników ma liczba 2025?.

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**Zadanie 3.**

W pojemniku była pewna ilość wody. Rozpuszczono w niej tyle soli kuchennej, że otrzymano roztwór o stężeniu 8%. Gdyby dosypać do niego jeszcze 100 g soli, to stężenie roztworu byłoby równe 10%. Ile wody, a ile soli kuchennej użyto do sporządzenia tego roztworu?

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**Zadanie 4.**

Pole trójkąta równoramiennego wynosi 48, a stosunek długości podstawy do wysokości opuszczonej na tę podstawę wynosi 3 : 2. W ten trójkąt wpisano okrąg, a następnie poprowadzono styczną do tego okręgu równoległą do podstawy trójkąta. Oblicz długość odcinka tej stycznej zawartej w trójkącie.

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**Zadanie 5.**

Cztery jednakowe kule o promieniu r stykają się każda z każdą. Oblicz promień najmniejszej kuli, która je wszystkie obejmuje.

