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namespace std;
#define area(r) r * r * acos(-1)
bool can(double mid, vector<int> &v, int f){
    int cnt = 0;
    for(int i = 0; i < int(v.size()); i++){
        cnt += int(area(v[i]) / mid);
    }
    return cnt >= f + 1;
}

int main(){
    int n, f, t;
    scanf("%d", &t);
    while(t--){
        scanf("%d %d", &n, &f);
        vector<int> v(n);
        for(int i = 0; i < n; i++) scanf("%d", &v[i]);
        double s = 0, e = 1e9;
        for(e *= 0.5; e > 1e-9; e *= 0.5)
            if(can(s + e, v, f)) s += e;
        printf("%.4lf\n", s);
    }
}

```