

13. In the sales collection, group sales by category and calculate the total revenue, total profit, and the average profit margin for each category.

```
db.sales.aggregate([
  {
    $addFields: {
      revenue: { $multiply: ["$quantity", "$price"] },
      profit: {
        $multiply: ["$quantity", { $subtract: ["$price", "$cost"] }]
      },
      profitMargin: {
        $cond: {
          if: { $eq: ["$price", 0] },
          then: 0,
          else: { $divide: [{ $subtract: ["$price", "$cost"] }, "$price"] }
        }
      }
    }
  },
  {
    $group: {
      _id: "$category",
      totalRevenue: { $sum: "$revenue" },
      totalProfit: { $sum: "$profit" },
      averageProfitMargin: { $avg: "$profitMargin" }
    }
  },
  {
    $sort: { totalRevenue: -1 }
  }
]);
```

```
schoolDB> db.sales.aggregate([
... {
...   $addFields: {
...     revenue: { $multiply: ["$quantity", "$price"] },
...     profit: {
...       $multiply: ["$quantity", { $subtract: ["$price", "$cost"] }]
...     },
...     profitMargin: {
...       $cond: {
...         if: { $eq: ["$price", 0] },
...         then: 0,
...         else: { $divide: [{ $subtract: ["$price", "$cost"] }, "$price"] }
...       }
...     }
...   },
... },
... {
...   $group: {
...     _id: "$category",
...     totalRevenue: { $sum: "$revenue" },
...     totalProfit: { $sum: "$profit" },
...     averageProfitMargin: { $avg: "$profitMargin" }
...   }
... },
... {
...   $sort: { totalRevenue: -1 }
... }
... ]]);
[
  {
    _id: 'Clothing',
    totalRevenue: 699.3,
    totalProfit: 349.3,
    averageProfitMargin: 0.4994994994994995
  },
  {
    _id: 'Electronics',
    totalRevenue: 479.70000000000005,
    totalProfit: 179.70000000000002,
    averageProfitMargin: 0.3746091307066917
  }
]
```