

```
> db.transactions.aggregate([{$unwind : "$transactions"}, {$match : {"transactions.transaction_code" : 'sell'}}, {$group : {_id : "$account_id", 'total_sell' : { $sum : 1}}}}]
{ "_id" : 97487, "total_sell" : 50 }
{ "_id" : 757619, "total_sell" : 45 }
{ "_id" : 910860, "total_sell" : 46 }
{ "_id" : 280867, "total_sell" : 42 }
{ "_id" : 855373, "total_sell" : 25 }
{ "_id" : 730824, "total_sell" : 29 }
{ "_id" : 460192, "total_sell" : 7 }
{ "_id" : 981028, "total_sell" : 27 }
{ "_id" : 759185, "total_sell" : 12 }
{ "_id" : 624318, "total_sell" : 2 }
{ "_id" : 158557, "total_sell" : 42 }
{ "_id" : 572998, "total_sell" : 2 }
{ "_id" : 904392, "total_sell" : 21 }
{ "_id" : 694827, "total_sell" : 38 }
{ "_id" : 375872, "total_sell" : 52 }
{ "_id" : 539248, "total_sell" : 5 }
{ "_id" : 836981, "total_sell" : 51 }
{ "_id" : 60664, "total_sell" : 7 }
{ "_id" : 616016, "total_sell" : 32 }
{ "_id" : 654939, "total_sell" : 20 }
Type "it" for more
> 
```

Q1. How many items are sold between ISODate("2015-03-23T21:06:49.506Z") to ISODate("2015-08-30T07:37:03.111Z").

```
> db.sales.aggregate([{$unwind : "$items"}, {$match : {"saleDate" : {$gte : ISODate("2015-03-23T21:06:49.506Z"), $lte : ISODate("2015-08-30T07:37:03.111Z")}}}], {$group : {_id : "$customer.email", "totalItemsSold" : { $sum : '$items.quantity' }}}]
{ "_id" : "ber@cozuw.au", "totalItemsSold" : 36 }
{ "_id" : "pif@zigo.ls", "totalItemsSold" : 19 }
{ "_id" : "tokifouhu@ren.bq", "totalItemsSold" : 27 }
{ "_id" : "finpiggan.is", "totalItemsSold" : 47 }
{ "_id" : "vozarobesid.yt", "totalItemsSold" : 9 }
{ "_id" : "enoujalg@holebhe.td", "totalItemsSold" : 3 }
{ "_id" : "pescobfan@in.net", "totalItemsSold" : 42 }
{ "_id" : "didati@anbej.bh", "totalItemsSold" : 8 }
{ "_id" : "nahuja@omtru.pr", "totalItemsSold" : 3 }
{ "_id" : "zozud@nios.bd", "totalItemsSold" : 14 }
{ "_id" : "deahoka@likej.fm", "totalItemsSold" : 19 }
{ "_id" : "zevalnet@vo.in", "totalItemsSold" : 1 }
{ "_id" : "kom@ca.ec", "totalItemsSold" : 38 }
{ "_id" : "fohejze@pijefeni.ag", "totalItemsSold" : 11 }
{ "_id" : "cupidho@omaro.be", "totalItemsSold" : 6 }
{ "_id" : "sar@icabivap.tc", "totalItemsSold" : 7 }
{ "_id" : "ginju@hionobi.jn", "totalItemsSold" : 43 }
{ "_id" : "co@tuhow.gb", "totalItemsSold" : 3 }
{ "_id" : "hes@uifro.sh", "totalItemsSold" : 1 }
{ "_id" : "ge@amebka.gu", "totalItemsSold" : 12 }
Type "it" for more
> 
```

Q2. What are the items sold on price along with their prices.

```
> db.sales.aggregate([{$unwind : "$items"}, {$project : {"_id" : 0, "customer.email" : 1, "items.name" : 1, "total" : { $multiply : [ "$items.price", "$items.quantity" ] }}}]
{ "items" : { "name" : "printer paper" }, "customer" : { "email" : "cauho@witwuta.sv" }, "total" : NumberDecimal("80.02") }
{ "items" : { "name" : "notepad" }, "customer" : { "email" : "cauho@witwuta.sv" }, "total" : NumberDecimal("70.58") }
{ "items" : { "name" : "pens" }, "customer" : { "email" : "cauho@witwuta.sv" }, "total" : NumberDecimal("280.60") }
{ "items" : { "name" : "backpack" }, "customer" : { "email" : "cauho@witwuta.sv" }, "total" : NumberDecimal("155.42") }
{ "items" : { "name" : "notepad" }, "customer" : { "email" : "cauho@witwuta.sv" }, "total" : NumberDecimal("36.94") }
{ "items" : { "name" : "envelopes" }, "customer" : { "email" : "cauho@witwuta.sv" }, "total" : NumberDecimal("159.60") }
{ "items" : { "name" : "envelopes" }, "customer" : { "email" : "cauho@witwuta.sv" }, "total" : NumberDecimal("24.24") }
{ "items" : { "name" : "binder" }, "customer" : { "email" : "cauho@witwuta.sv" }, "total" : NumberDecimal("42.48") }
{ "items" : { "name" : "envelopes" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("80.50") }
{ "items" : { "name" : "binder" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("254.79") }
{ "items" : { "name" : "notepad" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("62.85") }
{ "items" : { "name" : "laptop" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("3466.0") }
{ "items" : { "name" : "notepad" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("132.36") }
{ "items" : { "name" : "printer paper" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("37.55") }
{ "items" : { "name" : "backpack" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("166.56") }
{ "items" : { "name" : "pens" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("171.6") }
{ "items" : { "name" : "envelopes" }, "customer" : { "email" : "keecade@hen.uy" }, "total" : NumberDecimal("33.36") }
{ "items" : { "name" : "notepad" }, "customer" : { "email" : "worbiduh@vowbu.cg" }, "total" : NumberDecimal("30.08") }
{ "items" : { "name" : "binder" }, "customer" : { "email" : "worbiduh@vowbu.cg" }, "total" : NumberDecimal("172.76") }
{ "items" : { "name" : "notepad" }, "customer" : { "email" : "worbiduh@vowbu.cg" }, "total" : NumberDecimal("128.4") }
Type "it" for more
> 
```

Q3. How many pens and notepads are sold together ?

```
> db.sales.aggregate([{$match : {$and : [ {"items.name" : "notepad"}, {"items.name" : "pens"} ]}}, {$group : {_id : null, "count" : { $sum : 1}}}}]
{ "_id" : null, "count" : 2804 }
> 
```

Q4. How Many customers purchase items online ?

```
> db.sales.find({'purchaseMethod' : 'Online'}).count()
1585
> █
```

Q5. How many customers used coupons ?

```
> db.sales.find({'couponUsed' : true}).count()
477
> █
```

Q6. Show email of Female customers only.

```
> db.sales.aggregate([{$match : {"customer.gender" : "F"}}, {$project : { _id : 0 , "customer.email" : 1, "customer.gender" : 1}}])
{ "customer" : { "gender" : "F", "email" : "vatires@ta.pe" } }
{ "customer" : { "gender" : "F", "email" : "pan@cak.zn" } }
{ "customer" : { "gender" : "F", "email" : "keigutlp@vaw.tc" } }
{ "customer" : { "gender" : "F", "email" : "merto@betosiv.pm" } }
{ "customer" : { "gender" : "F", "email" : "la@cevam.tj" } }
{ "customer" : { "gender" : "F", "email" : "gul@waija.nz" } }
{ "customer" : { "gender" : "F", "email" : "se@nacwev.an" } }
{ "customer" : { "gender" : "F", "email" : "velo@nukav.fr" } }
{ "customer" : { "gender" : "F", "email" : "elusekjiv@kuajmag.as" } }
{ "customer" : { "gender" : "F", "email" : "beecho@vic.be" } }
{ "customer" : { "gender" : "F", "email" : "fimpig@an.is" } }
{ "customer" : { "gender" : "F", "email" : "zu@bainku.za" } }
{ "customer" : { "gender" : "F", "email" : "oh@ocdumvi.nq" } }
{ "customer" : { "gender" : "F", "email" : "jorcol@ir.se" } }
{ "customer" : { "gender" : "F", "email" : "wuulabeb@patsef.vu" } }
{ "customer" : { "gender" : "F", "email" : "civma@rozfon.tr" } }
{ "customer" : { "gender" : "F", "email" : "ugmu@bekuba.tg" } }
{ "customer" : { "gender" : "F", "email" : "kupeen@gareha.ne" } }
{ "customer" : { "gender" : "F", "email" : "cuwoik@luvgu.tc" } }
{ "customer" : { "gender" : "F", "email" : "mucloji@popitdib.fi" } }
Type "it" for more
> █
```

Q7. Show items that females bought between the ages of 20 – 30.

```
> db.sales.aggregate([{$match : {$and : [ {"customer.gender" : "F"}, {"customer.age" : {$gte : 20, $lte : 30}} ]}}, {$project : {_id : 0, "customer.email" : 1, "items.name" : 1}}, {$limit : 5}]).pretty()
{
  "items" : [
    {
      "name" : "printer paper"
    },
    {
      "name" : "notepad"
    },
    {
      "name" : "Laptop"
    },
    {
      "name" : "notepad"
    },
    {
      "name" : "backpack"
    },
    {
      "name" : "envelopes"
    },
    {
      "name" : "envelopes"
    },
    {
      "name" : "binder"
    }
  ],
  "customer" : {
    "email" : "zu@bainku.za"
  }
}
```

Q8. Show total sales of storeLocation “New York”

```
> db.sales.aggregate([{$unwind : "$items"}, {$match : {"storeLocation" : "New York"}}, {$group : { _id : null, 'total_sales' : {$sum : {$multiply : ["$items.price", "$items.quantity"]} }}]
{ "_id" : null, "total_sales" : NumberDecimal("1016059.59") }
>
```

Q9. Show customer emails who's satisfaction is above 4

```
> db.sales.find({"customer.satisfaction": {$gt : 4}}, {_id : 0, "customer.email" : 1, "customer.satisfaction" : 1})
{ "customer" : { "email" : "keecade@hem.uy", "satisfaction" : 5 } }
{ "customer" : { "email" : "worbiduh@vowbu.cg", "satisfaction" : 5 } }
{ "customer" : { "email" : "pan@cak.zm", "satisfaction" : 5 } }
{ "customer" : { "email" : "rapifoozi@viuppen.bb", "satisfaction" : 5 } }
{ "customer" : { "email" : "gul@walja.nz", "satisfaction" : 5 } }
{ "customer" : { "email" : "velo@nukav.fr", "satisfaction" : 5 } }
{ "customer" : { "email" : "fimpig@an.is", "satisfaction" : 5 } }
{ "customer" : { "email" : "jalpo@ha.mq", "satisfaction" : 5 } }
{ "customer" : { "email" : "zu@bainku.za", "satisfaction" : 5 } }
{ "customer" : { "email" : "du@il.ug", "satisfaction" : 5 } }
{ "customer" : { "email" : "civma@rozfon.tr", "satisfaction" : 5 } }
{ "customer" : { "email" : "ugnu@bekuba.tg", "satisfaction" : 5 } }
{ "customer" : { "email" : "kupeen@gareha.ne", "satisfaction" : 5 } }
{ "customer" : { "email" : "cuwoik@luvgu.tc", "satisfaction" : 5 } }
{ "customer" : { "email" : "do@neokliw.sz", "satisfaction" : 5 } }
{ "customer" : { "email" : "citga@fo.pg", "satisfaction" : 5 } }
{ "customer" : { "email" : "apokas@mlz.tg", "satisfaction" : 5 } }
{ "customer" : { "email" : "ti@zawpa.it", "satisfaction" : 5 } }
{ "customer" : { "email" : "ce@jinsuod.sy", "satisfaction" : 5 } }
{ "customer" : { "email" : "ep@jedofi.gd", "satisfaction" : 5 } }
Type "it" for more
>
```

Q10. How many females' satisfaction is above 4, who buys items from In Store.

```
> db.sales.aggregate([{$match : {$and : [{"customer.gender" : 'F'}, {"customer.satisfaction" : {$gt : 4}}, {"purchaseMethod" : "In store"}]}]}]).pretty()
{
  "_id" : ObjectId("5bd761dcae323e45a93ccfee"),
  "saleDate" : ISODate("2014-11-11T02:13:51.893Z"),
  "items" : [
    {
      "name" : "laptop",
      "tags" : [
        "electronics",
        "school",
        "office"
      ],
      "price" : NumberDecimal("604.12"),
      "quantity" : 4
    },
    {
      "name" : "binder",
      "tags" : [
        "school",
        "general",
        "organization"
      ],
      "price" : NumberDecimal("11.05"),
      "quantity" : 7
    },
    {
      "name" : "binder",
      "tags" : [
        "school",
        "general",
        "organization"
      ],
      "price" : NumberDecimal("20.94"),
      "quantity" : 5
    },
    {
      "name" : "backpack",
      "tags" : [
        "school",
        "travel",
        "kids"
      ],
      "price" : NumberDecimal("61.16"),
      "quantity" : 5
    }
  ]
}
```

Q11. Total sales of Pens from storeLocation Seattle.

```
> db.sales.aggregate([{$unwind : '$items'}, {$match : {$and : [{"storeLocation" : "Seattle"}, {"items.name" : "pens"}]}]}, {$group : {_id : null, 'total_sales' : { $sum : { $multiply : ["$item.price", "$items.quantity"] } } } }])
{ "_id" : null, "total_sales" : NumberDecimal("123445.61") }
>
```

Q12. How Many female customers bought laptop in London.

```
> db.sales.aggregate([{$match : {"customer.gender" : 'F', "items.name" : 'laptop', 'storeLocation' : 'London'}}, {$group : {_id : null, 'total' : {$sum : 1}}}]])
{ "_id" : null, "total" : 184 }
>
```

Q13. How many male customers bought a laptop and backpack together.

```
> db.sales.aggregate([{$match : {"customer.gender" : 'M', "items.name" : 'laptop', 'storeLocation' : 'London'}}, {$group : {_id : null, 'total' : {$sum : 1}}}]])
{ "_id" : null, "total" : 182 }
>
```

Q14. What is the average age of customers who used coupons

```
> db.sales.aggregate([{$match : {"couponUsed" : true}}, {$group : {_id: null , 'Average Age' : {$avg : "$customer.age"}}}])
{ "_id" : null, "Average Age" : 43.729559748427675 }
>
```

Q15. What is the average age of customers who bought items online.

```
> db.sales.aggregate([{$match : {"purchaseMethod" : 'Online'}}, {$group : {_id: null, 'Average age of Customers' : {$avg : "$customer.age"} } }])
{ "_id" : null, "Average age of Customers" : 44.71608832807571 }
>
```

Q16. How many females used coupons

```
> db.sales.aggregate([{$match : {$and : [{"customer.gender" : 'F'}, {'couponUsed' : true}] }}, {$group: {_id: null, 'Total Females used Coupon' : {$sum : 1}}})
{ "_id" : null, "Total Females used Coupon" : 239 }
>
```

Q17. How many males used coupons

```
> db.sales.aggregate([{$match : {$and : [{"customer.gender" : 'M'}, {'couponUsed' : true}] }}, {$group: {_id: null, 'Total males used Coupon' : {$sum : 1}}})
{ "_id" : null, "Total males used Coupon" : 238 }
>
```

Q18. Total sales of backpack from ISODate("2017-06-22T09:54:14.185Z") to ISODate("2017-12-03T18:39:48.253Z")

```
> db.sales.aggregate([{$unwind : "$items"}, {$match : {$and : [{'saleDate' : {$gte : ISODate("2017-06-22T09:54:14.185Z")}, {$lte : ISODate("2017-12-03T18:39:48.253Z")}]}, {"items.name" : "backpack"}}]}, {$group : {_id : null, 'total sales' : {$sum : {$multiply : ["$items.price", "$items.quantity"]}}}]})
{ "_id" : null, "total sales" : NumberDecimal("81894.41") }
>
```

Q19 How many store locations do we have?

```
> db.sales.aggregate([{$group : {_id : "$storeLocation", 'total' : {$sum : 1}}}])
{ "_id" : "Denver", "total" : 1549 }
{ "_id" : "London", "total" : 794 }
{ "_id" : "Seattle", "total" : 1134 }
{ "_id" : "San Diego", "total" : 346 }
{ "_id" : "Austin", "total" : 676 }
{ "_id" : "New York", "total" : 501 }
>
```

Q20 Show total sales by each store location.

```
> db.sales.aggregate([{$unwind : "$items"}, {$group : {_id : "$storeLocation", 'total sales' : {$sum : {$multiply : ["$items.price", "$items.quantity"]}}}]})
{ "_id" : "New York", "total sales" : NumberDecimal("1016059.59") }
{ "_id" : "Austin", "total sales" : NumberDecimal("1445603.11") }
{ "_id" : "San Diego", "total sales" : NumberDecimal("672885.17") }
{ "_id" : "Seattle", "total sales" : NumberDecimal("2255947.69") }
{ "_id" : "Denver", "total sales" : NumberDecimal("2921009.92") }
{ "_id" : "London", "total sales" : NumberDecimal("1583066.79") }
>
```