

Title: The Cost of Aggregate... Activity 15

time 1 hour

I will be able to: calculate the costs of aggregates and its transportation

I will use the skills of: division/multiplication/read & make a chart

Read the following facts about aggregate use and its costs. Use these numbers to figure out the problems below them.

- a truck holds about **15 tonnes**
- each truck is about **10 m long**
- 3" base gravel costs **\$5 tonne**



Facts:- a typical elementary school uses about 1800 tonnes of aggregate.

Problem: how many truckloads would it take?
 $1800 \div 15 = 120$ truckloads

Problem: how long a line would the trucks make if placed end to end?
 $120 \times 10 = 1200$ m long

Problem: how much would the aggregate cost?
 $\$5 \times 1800 = \9000

Facts:- a typical 2000 ft² house uses about 15 truckloads of aggregate.

Problem: how many tonnes would it take?
 $15 \text{ trucks} \times 15 \text{ t} = 225 \text{ tonnes}$

Problem: how long a line would the trucks make to build a house for each person in this class?
 $30 \times 15 \times 10 = 4500$ m long

Problem: how much would the gravel cost for 1 house?
 $\$5 \times 15 \times 15 = \1125



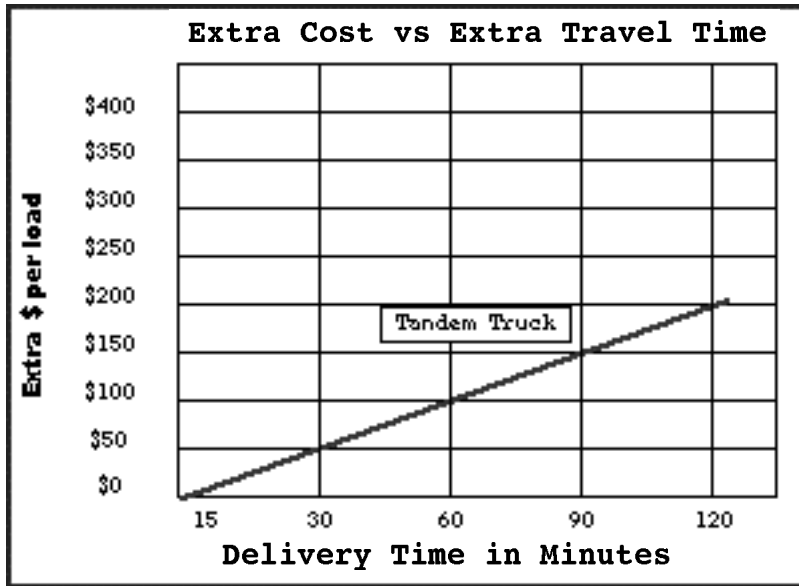
Facts:- a typical 1 km road uses about 1000 truckloads of aggregate.

Problem: how many tonnes would it take?
 $1000 \times 15 = 15000$ tonnes

Problem: how long a line would the trucks make to build a road 1 km long for each person in this class?
 $10 \text{ m} \times 1000 \times 30 = 300\,000$ m long

Problem: how much would the gravel cost for class road?
 $\$5 \times 15\,000 = \$75\,000$

Delivery Costs



Facts:

- delivery usually requires a round trip = there and back
- 30 min. is = 10 km 1 way
- truckload of aggregate = \$75

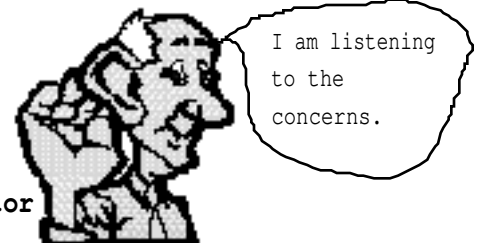
Example: a 20 km delivery

- 20 km = 60 min. 1 way
- 40 km = 120 min. return
- \$200 delivery cost
- aggregate = \$75
- total = \$75 + \$200

thoughtful council

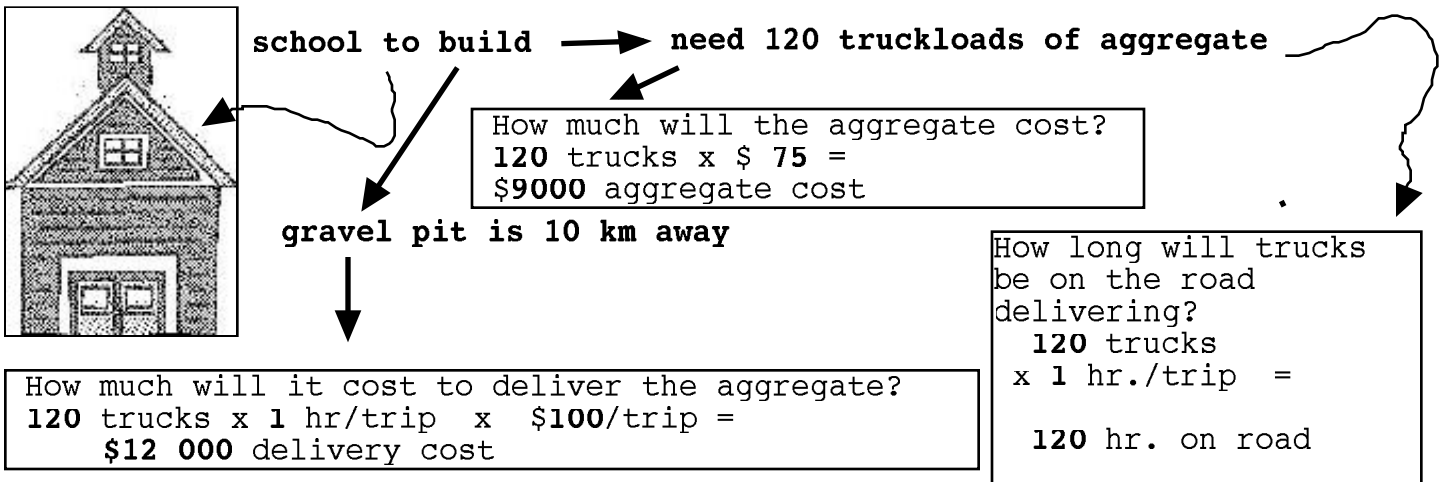


Some people are concerned about Gravel mining but we think it is valuable and important to our community.



I am listening to the concerns.

gravel pit operator



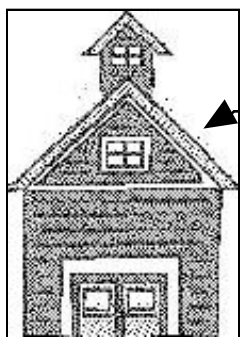


I don't want any noisy, dusty gravel trucks going by my country estate. Get your gravel somewhere else!!!

angry/grumpy man



The municipal council voted to stop gravel mining in their municipality. Now gravel must be hauled from 30 km away in the next municipality.



school to build → need 120 truckloads of aggregate

How much will the aggregate cost?
 120 trucks x \$ 75 =
 \$9000 aggregate cost

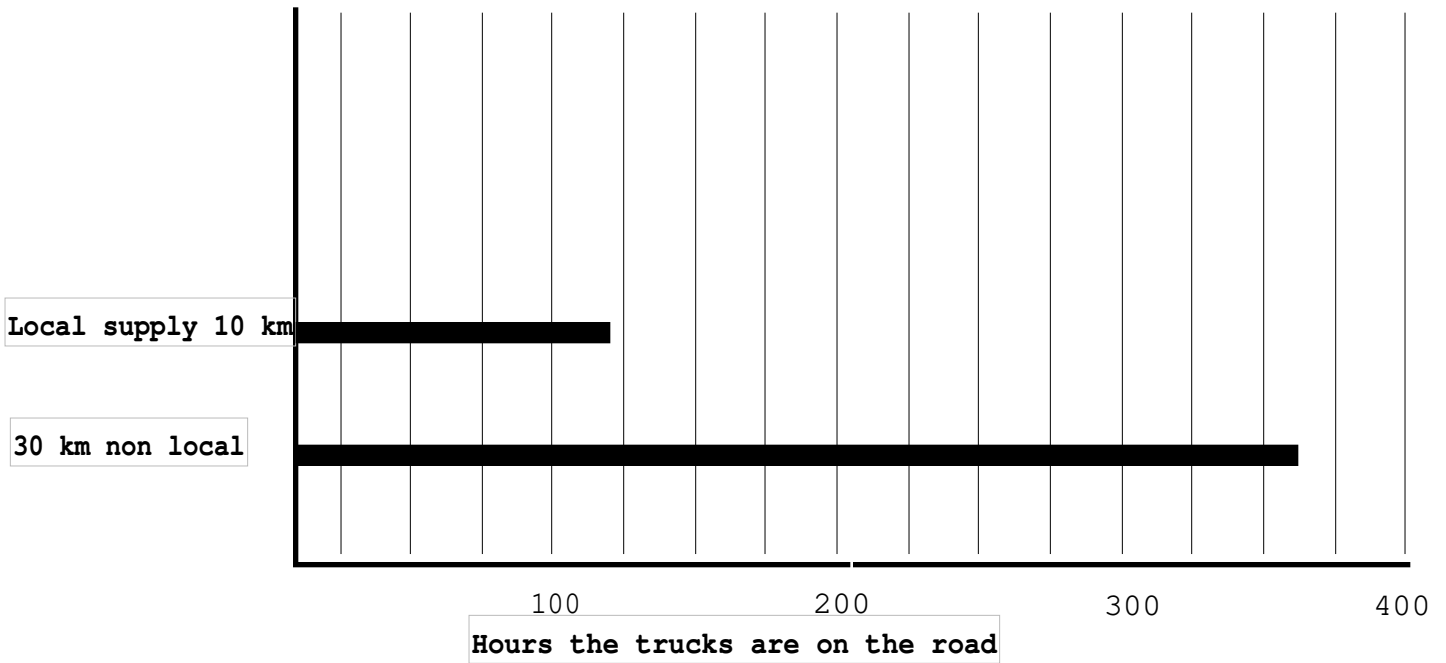
gravel pit is 30 km away

How long will trucks be on the road delivering?
 120 trucks
 x 3 hr./trip =
 360 hr. on road

How much will it cost to deliver the aggregate?
 120 trucks x 3 hr/trip x \$100/hr =
 \$ 36 000 delivery cost

Using the information in the school building problems above, create bar graphs in the charts below. Be sure to put the # of hours and \$ at the bottom of the chart first.

Comparison of how long trucks are on roads hauling aggregate from differing distances



Comparison of cost for aggregate and delivery for different distances.

