

# HST derby



**GRADE**  
**8**

This lesson introduces students to the concept of retail sales tax through a race called HST derby. To complete the race, students work in cooperative teams to accurately calculate HST on a variety of purchases.



## Subject

Mathematics

## Suggested timing

80 minutes (2 x 40 minutes periods)

## Financial literacy objectives

At the end of this lesson, students will:

- describe the purpose and role of taxation and calculate its impact on purchases.

## Curriculum expectations

Mathematics, grades 1-8 (2005)  
Mathematics

### Number sense and numeration

- Solve problems involving percents expressed to one decimal place (e.g., 12.5%) and whole number percents greater than 100 (e.g., 115%).

## Assessment

Collect: HST worksheet (Appendix A).

## What you need

- HST worksheet (Appendix A)
- Five sample sales receipts (Appendices B, C & D)
- A book of sales receipts from an office supplier OR copies of blank receipts (Appendix E)
- Sales tags for HST derby (Appendix F)
- Calculators – one per group

**Minds on**

Show students an item (e.g., a stapler, an article of clothing, etc.), and state the price of it. Ask if the price tag reveals the actual amount a person would pay when at the cash register in a store. (It is likely that students will respond that sales tax is applied and the final cost to the consumer will be higher.)

Generate a whole class discussion by asking the following:

1. What is the purpose of a sales tax?
2. Why do retailers collect this money from their customers?

**Action****Instructions**

- Explain to students that today's lesson is called HST derby. Introduce the concept of a derby explaining that a derby is a race. The goal of the activity is to work in teams in a relay race format in order to calculate the cost of HST on various items.
- Before starting the derby, students will explore points of information about Ontario's Harmonized Sales Tax (HST).
- Create a word wall of terms on the board prior to the instruction.
- Using visual images or a dramatic simulation, ensure that students understand the following concepts:
  - *HST* (or Harmonized Sales Tax) is an extra charge that must be added to the price of goods or services sold.
  - The seller must *remit* (send in) all the HST that he/she has collected on behalf of the government. The government uses the money that it collects to provide services to the community.
  - The amount of HST that is added to the price of an item is calculated as a *percentage* of the item's price. Remember, some "items" can also be services, such as getting a haircut.
  - The percentage that is added to the price (*rate*) varies from province to province. In Ontario, the rate is 13% - a combined rate of the Ontario (provincial) sales tax and federal sales tax.
  - Is HST added to everything? NO! Some items and services are considered tax *exempt* (no tax is charged), such as: basic groceries, prepared food and beverages sold for \$4.00 or less, prescription drugs, most health and education services, childcare, most agricultural products, farm livestock and many medical devices.

Option: show images of these items as they are explained by pasting representative images of each on the board.

**Action**  
(cont'd)**Guided practice: Calculating HST**

- Return to the example given at the start of the “Minds on.” Ask if any students already know how to calculate the rate of HST on this product. Invite a volunteer to practise and model their approach on the board.
- Explain and model 2 HST calculations:
  - To calculate what is **X% of Y** [Example: What is 13% of \$135?]:
    - Convert 13% to a decimal:  $13/100=0.13$
    - Multiply  $\$135 \times 0.13 = \$31.05$  HST
  - To calculate what percentage \$A is of \$B [Example: What percent is \$30 of \$160?]:
    - Divide  $30/160=0.1875$
    - Multiply  $0.1875 \times 100 = 18.75\%$
- Hand out the sample receipts to the class (Appendices B, C and D). Review Receipt #1 together and help the students determine what percentage HST was charged on the total. Reinforce the concept of HST-exempt items.
- Distribute the HST handout (Appendix A). Working in pairs, have students complete the worksheet and submit individual responses for assessment. Before moving on to the derby, ensure that every student feels comfortable calculating HST.

**Activity: HST derby**

- Explain to students that they will now compete in the HST derby to showcase their ability to calculate retail tax.
- Align students in rows of approximately 6 students. Make sure that there is open space to walk between rows. Designate a “starting point” desk and an “ending point” desk for each team. Situate the starting point desks for each team at the front of the room and the ending point desks for each group at the back of the room.
- On each of the “ending point” desks, place a calculator, a pen and a pile of receipts. On each of the starting point desks, place a stack of price tags (ensure that each group has the exact same number of tags with the same items and prices listed).

**Action**  
(cont'd)**Starting the derby**

Signal the start of the game by flicking the lights or ringing a bell. The student in position 1 walks to the starting point desk. He/she selects a price tag from the starting point desk and walks past his/her group to the end point desk, sits at the desk and uses the calculator to calculate the HST listed on his/her price tag. He/she fills out the amount on the receipt and brings it to the starting point desk. Student 1 tags the person closest to the front who is sitting in position 2.

Everyone in the group moves forward in the row and student 1 goes and sits at the back of his/her team's row.

Student in position 2 picks up the price tag from the starting point desk and takes it to the end desk to do his/her price tag calculation and continues the relay by tagging student 3 when finished.

Whichever group completes all receipts in the shortest amount of time *and* with the most correct totals wins the HST derby.

**Consolidation/  
debrief**

To debrief the lesson and activity, prompt discussion using the following questions:

1. Why are taxes like the HST added to the price of goods or services?
2. Should all people have to pay HST? Why or why not?
3. Some items are tax exempt, as you learned. Based on the types of items in this category, speculate on the reason for their exemption.
4. What other, if any, types of items should be exempt? Why?
5. Speculate as to what happens to HST when it is remitted to the government.  
How can you find out what happens to it?



# HST worksheet

**Instructions**

1. **Using the sales receipts provided, record the following** on the chart below:
  - The total from each receipt (how much customer had to pay).
  - The sub-total of each receipt (the total price of all items before the HST was added).
  - The amount of HST charged on each receipt.
2. **Calculate and record** on the chart:
  - At what *percent* was the HST calculated and charged on the subtotal of each receipt?
  - Be sure to show your calculations in the last column of the table.

Receipt total	Subtotal PRIOR to addition of HST	HST amount charged	YOU CALCULATE: At what % of the subtotal was the HST charged?

**Challenging your thinking**

1. Why are some of the HST percentage calculations in the chart above not at Ontario’s provincial rate?
2. Al-Noor goes to a hamburger joint with his friend to purchase two hamburgers. The burgers cost \$3.95 each. Al places the order and pays \$8.93 for his purchase. Al’s friend informs him that she could have purchased the two burgers for only \$7.90. How could she have done this?

# Sales receipt 1



**Super Saver Haven**  
 496 Shoppers Lane,  
 Stingytown, ON L3R 8E9  
 905-123-4567  
 HST Registration # 12345 6789 RT0002  
 .....  
 Date 2012  
 Time 11:15:11  
 Receipt # C3085-001-4623-010-0  
 .....

Sale

SKU#	Description	Amount
360494	T Shirt blue	14.99
360513	Jeans BootCut	34.99
350292	ToothDecay: Gum	2.47
320676	DVD: Saving Money	19.99
310843	Poster: Cute Puppies	12.47
5 items	Subtotal:	84.91
	HST:	11.04
	<b>Total</b>	<b>\$ 95.95</b>

Please retain receipt for refund and warranty. Refund within 30 days if unused and in original package.

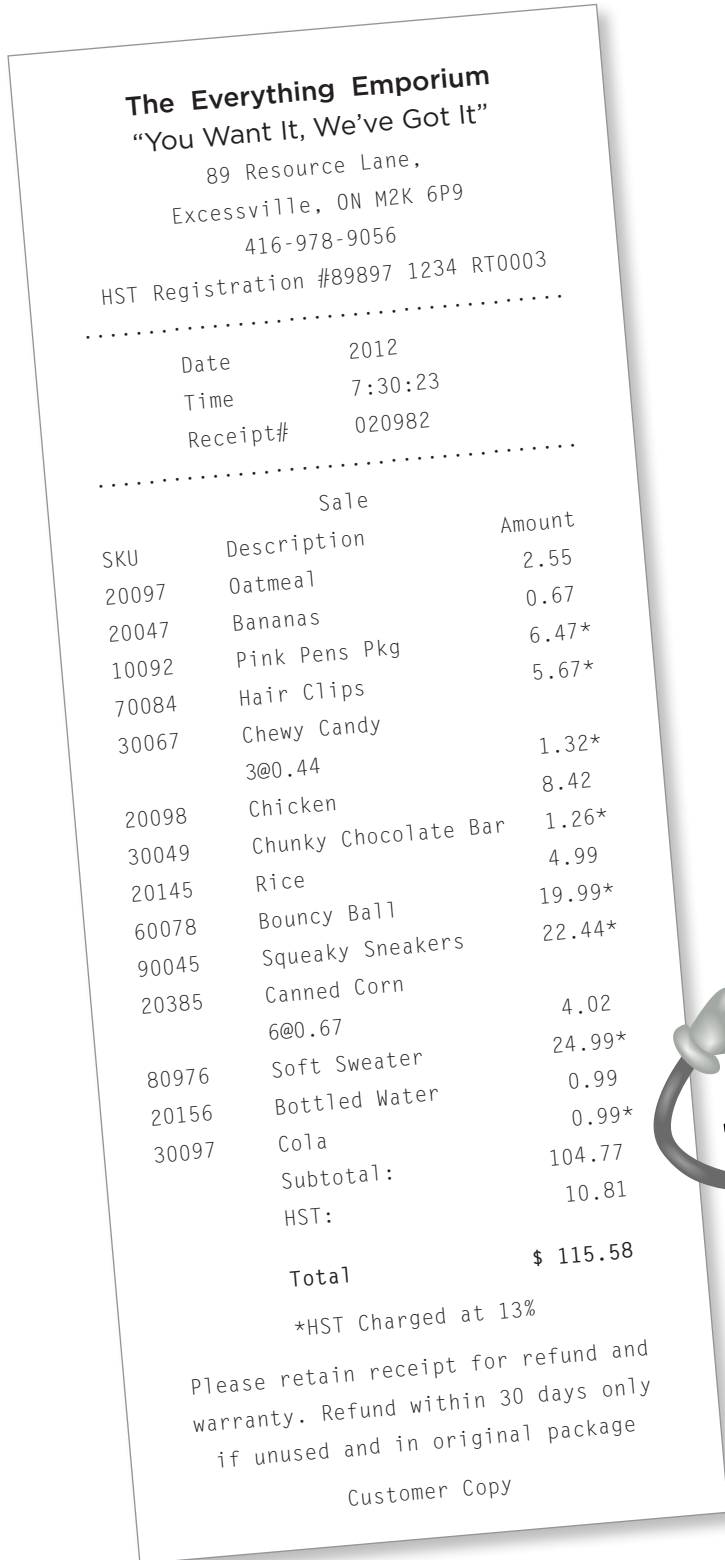
Store Hours: Mon. to Fri. 9-9pm  
 Sat. & Sun. 10-6pm

Clearance Items Are Final Sale

# Sales receipt 2 and 3



# Sales receipt 4







# Materials for HST derby

**Prescott Industries  
Sales Receipt**

Date: \_\_\_\_\_

Customer: \_\_\_\_\_

Item	Price
	\$
<b>Subtotal</b>	
<b>HST</b>	
<b>Total</b>	

Thank you for your business!

## HST derby

## Sales tags



Sunglasses

\$30.50



250 ml juice bottle

\$2.20



Roller ball pen, 5 pk

\$6.90



Agenda - weekly planner

\$15.10



Organic fish food, 50 g

\$4.70



Socks

\$4.10



Fuzzy slippers

\$11.40



Frying pan

\$23.00



USB flash drive, 6GB

\$11.30



Vest, size small

\$33.70



Scissors

\$12.80



DVDs, 30 ct

\$14.40



Umbrella

\$13.60



Alarm Clock

\$29.70



Stapler

\$21.30



Suitcase

\$41.30

