



# DIAMOND ESSENTIALS



## DIAMOND ESSENTIALS

Carat Weight and Value



**GIA**  
GEMOLOGICAL INSTITUTE OF AMERICA®

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**Facing page: This striking marquise-shaped diamond weighs an impressive 23.80 cts.**



Tao-Chuan Yeh/AFP

## Carat Weight and Value

Not long ago, a young couple walked into Sutton Jewelers. Carol James approached them with a smile, greeted them, introduced herself, and said, "How can I help you today?"

"We're shopping for an engagement ring," the young man replied. After a few minutes of questions and answers, Carol had a good idea of what the couple was looking for. She also knew that their names were Elizabeth and Scott, and that they planned to get married the following year. She led them to the diamond ring counter and brought out a ring that featured a 0.77-ct., G-VS<sub>2</sub> round brilliant diamond. She cleaned it and handed it to Scott, who slid it onto Elizabeth's finger.

"The setting is 14-karat gold. The diamond weighs just over three-quarters of a carat." Having given them these two important pieces of information, she fell silent to let them admire the ring.

**Carat**—The international unit of measurement for gem weight. One carat equals 1/5 of a gram (0.200 g).



Eric Welch/GIA

Customers often consider the size of a diamond first. This gives you the opportunity to explain how size relates to clarity, color, and cut to help determine a diamond's value.

Elizabeth held her hand out so she and Scott could get a better look at the ring. After turning her hand and seeing the brilliance and fire, she said, “It’s beautiful—it’s just what I wanted!”

“Do you like the size of the diamond?” Scott asked, looking at Elizabeth.

“I hadn’t thought about it. Is this a good size?” Elizabeth asked Carol.

“It’s a wonderful size,” Carol replied. “As I said, it weighs a little over three-quarters of a carat—the exact weight is 77 points, or 77-hundredths of a carat. The color grade is G, and that’s very good. The clarity is good, too. It’s a VS<sub>2</sub>, which means it has a couple of minor inclusions inside it—things that are so small that you can’t see them with your naked eye.”

“The clarity is better than most of the other diamonds in this display,” Carol went on to say. “We can certainly find you a larger diamond, but you’ll either need to pay more or get one with a lower color or clarity grade—or maybe one that isn’t cut as well as this one is. But, for the money, this diamond is one of the best values in the store.”

“I think it’s perfect,” Elizabeth said, looking at Scott.

The presentation went on for a few more minutes. The couple asked about the price of the ring and they discussed payment options. Carol explained how to clean the ring. With all that out of the way, Elizabeth and Scott left the store, happy with their new purchase. The 0.77-ct. diamond gleamed on Elizabeth’s finger—it was almost as brilliant as the smile on her face.

This couple illustrates the fact that different customers are concerned with different things. Elizabeth and Scott probably didn’t know the details of clarity, color, or cut—they might not even have known that diamonds come

in different colors. But they did know that diamonds come in different sizes. And they brought up a question about the size even before they asked about price.

They probably understood that big diamonds cost more than small ones, even though, as you will learn in this assignment, that isn't always true. But that's about as far as it went for them—and for many other customers as well.

Besides weight, a diamond's dimensions are also important. As you learned in Assignment 4, you use dimensions to analyze a diamond's proportions. You also need to know the dimensions to select the proper setting for a loose diamond or to estimate the weight of mounted diamonds.

Few retail customers realize how precisely diamonds are weighed and measured. You might not be too clear on it, either. If you work in a retail store, especially if you sell only mounted goods, you might not have to weigh or measure diamonds. But you probably have to explain carat weight to your customers. This assignment will make that job easier for you.



Eric Welch/GIA

A carat is a small unit of weight: 142 of them make an ounce. In the US, that's the weight of a first-class letter, so you could send 142 one-carat diamonds in an envelope with a single postage stamp.

## The Obvious C

- What units of measure are used to describe diamond weight?
- What is the best way to describe diamond weight to a retail customer?
- What are some common instruments for weighing diamonds?

As you know, diamond weights are expressed in metric measurements called carats. One carat is equal to 200 milligrams, 1/5 of a gram, or 0.200 gram. A carat is pretty small: It takes 142 of them to make an ounce. The majority of diamonds used in jewelry weigh under one carat.

When written, carat is usually abbreviated "ct." Carat weights are usually expressed as decimal numbers: 1.00 ct., 0.23 ct., 1.57 cts., and so on. A carat is the standard unit of weight for most gemstones, not just diamonds. As you learned in Assignment 1, the metric carat is divided into 100 points. The abbreviation for point is "pt."

**Key Concepts**  
A diamond's carat weight and dimensions influence its value.

**The majority of diamonds used in jewelry weigh under one carat.**



CARAT WEIGHT



Valerie Power/GIA

Tiny diamonds are weighed in hundredths of a carat. These pink diamonds weigh between 0.01 and 0.10 ct. Among trade members, their weights might be described as one to ten points.



Ethical presentation of jewelry includes clear and accurate descriptions of diamond weight.

There are many ways to describe a diamond's weight. You might state it one way to a retail customer, another way to a supplier. You'll learn about the different ways to express diamond weight in the next section.

## Expressing Diamond Weight

Imagine that you're showing a diamond to a retail customer. The diamond weighs 0.47 ct. Which of the following is the best way to describe the weight in a sales presentation?

“This diamond weighs 47 points.”

“This diamond weighs just under a half carat.”

“This is a half-carat diamond.”

“The diamond weighs point 47 carat.”

One of these descriptions is just plain wrong. It isn't a half-carat diamond. It weighs almost a half carat, but that doesn't make it a half-carat diamond. As you'll learn later, the diamond must weigh no less than 0.495 ct.—49.5 points—for you to ethically describe it as a “half-carat diamond” in a sales presentation or advertisement.

Of the other descriptions, “This diamond weighs just under a half carat” isn't bad as long as you state the exact weight at some point in the sales presentation. You can write it on the sales receipt, or you can state it verbally. That's what Carol did at the beginning of this assignment. But you must state it somewhere, somehow. Always make sure that your description of a diamond's weight is clear, understandable, and accurate.

## Key Concepts

**Make sure that your description of a diamond's weight is clear, understandable, and accurate.**



Eric Welch/GIA

When you show an item with small diamonds, you can express their weight in points, but it's also important to let your customer know how that weight translates to carats.



Underwood &amp; Underwood/Corbis

The carat was standardized in the early twentieth century. This gave dealers a uniform and universally accepted weight standard for diamonds.

## History of the Carat

As you learn more about gemstone weight, you'll realize just how important it is to have a small, accurate unit for precise weight measurements. Modern technology has made such precision possible, but in ancient times, digital scales didn't exist. The carat system sprouted from a carob seed.

The carob seed comes from the locust tree. The seeds grow in pods that are used for flavoring and for livestock feed. Because the small seeds are fairly uniform in size and weight, they provided a fairly consistent basis for gem weight. Early gem merchants and jewelers used them as counterweights in hand-held balance scales.

Even when more-precise weighing methods evolved, carat weight wasn't constant: A "one-carat" diamond might have weighed anywhere from 0.95 to 1.07 metric carats. This was true until the early twentieth century, when a carat was standardized as 0.20 gram. The carat now stands for the same gem weight in every corner of the world.



Polygal AG

The modern carat system started with the carob seed. Early gem traders used the small, uniform seeds as counterweights in their balance scales.

**Melee**—Very small faceted diamonds.



Ralph Gabriner/Michael David Designs, Ltd.

Very small diamonds, called *melee*, are often set in rows or clusters. There are 78 of them in this ring, and each one makes its own contribution to the ring's overall beauty.

## Melee: Very Small Diamonds

You've probably seen jewelry set with very small faceted diamonds. Those very small diamonds are called *melee* (rhymes with belly). They might be used alone or grouped with other *melee*, or they might provide a glittering backdrop for a large central diamond or colored stone.

The exact size range of *melee* varies from country to country, and from one segment of the trade to another. For some people, *melee* must weigh less than 10 points; for others, less than 15 points. Some people set the size limit for *melee* at 17 or 18 points. Still others reserve the term for diamonds between 8 and 13 points in size.

No matter what the weight boundaries are, all agree that *melee* are very small. But because they're diamonds, they can still return light to the eye with dazzling efficiency.



Eric Welch/GIA

The diamonds in this ring weigh .05 ct. each, so you can express the total weight as 0.25 ct., or "point 25 ct."

**Total weight**—The combined weight of all the diamonds in a piece of jewelry that only contains diamonds.

What about stating the weight in points—as in “This diamond weighs 47 points”? There’s a good reason why you shouldn’t say this to a retail customer: Few people outside the jewelry trade are familiar with the term. The US Federal Trade Commission (FTC) says that giving the weight in points without further explanation is “unfair or deceptive.” They recommend that you also state the carat equivalent. In other words, you should say something like this: “This diamond weighs 47 points—that’s 47-hundredths of a carat.” If you put it in writing, it should read “0.47 ct.”

So, in this example, the best way to accurately describe the diamond’s weight to a retail customer is, “The diamond weighs point 47 carats.” To give your customer a reference point, it helps to add, “That’s just under half a carat.”

Describing diamond weight is a little more complicated if you’re dealing with a piece of jewelry that’s set with more than one diamond. Then you need to state the *total weight* of all the diamonds. If you’re showing a piece with more than one diamond, be sure to state the sizes, or size range, of the stones clearly. You might say something like this: “The diamonds in this

ring weigh between a quarter and a third of a carat each; the total weight is 1.42 cts.”

If an item contains both diamonds and colored stones, or all colored stones, the weight of all the gems is called *total gem weight*. You should state it something like this: “This bracelet contains rubies, sapphires, and diamonds that weigh between a quarter and a half a carat each. The total gem weight is 1.75 cts.”

Gem professionals have their own ways of expressing weight. One term you might hear from a dealer is *light half*. It refers to a stone that’s somewhere between 0.45 ct. and 0.49 ct. A *light carat* is between 0.96 ct. and 0.99 ct.

Wholesalers often assemble parcels of similarly sized stones and describe the weight of the stones in ranges. The stones in a parcel of “thirds”—meaning one-third of a carat—might range from 0.30 ct. to 0.37 ct. A parcel of “halves” might range from 0.50 to 0.69 ct. Dealers and other businesses that buy large lots of stones use these specialized trade terms as a type of verbal shorthand. It’s a good idea for you to be familiar with them, but be especially careful not to confuse retail customers by using trade terms.

There’s something you might notice about the weight examples in this assignment: They’re all stated in hundredths of a carat—that is, to two decimal places. What you might not know is that it’s diamond industry practice to weigh diamonds to a thousandth of a carat (three decimal places), then round the weight to a hundredth of a carat. So if a diamond weighs 1.699 cts., its weight would be rounded to 1.70 cts. The FTC says that stated diamond weight should be accurate to the last decimal place.



Clara Zink/GIA

Wholesalers have their own ways of expressing diamond weights, especially when they deal in parcels. But trade terms can be confusing for retail consumers. It’s best to use terms they’re familiar with, like carats.



When a piece of jewelry contains a variety of gems, you can determine the total gem weight of the item by adding the weights of all the gems together. The total gem weight of this ruby and diamond ring is 7.95 cts.

**Key Concepts**  
Don’t use trade terms to express gem weight to customers.

**Total gem weight**—The combined weight of all the stones in a piece of jewelry that contains a variety of gems.

**Light half**—A trade term for a diamond that weighs between 0.45 ct. and 0.49 ct.

**Light carat**—A trade term for a diamond that weighs between 0.96 ct. and 0.99 ct.

The FTC's procedure for rounding diamond weight is slightly different from the practices generally followed by the jewelry industry. Here are the general rules for rounding that you can follow to be in compliance with FTC guidelines:

- If the number in the thousandths place is less than 5, drop it and make no changes. A diamond that weighs 1.684 cts. should be stated as 1.68 cts.
- If the number in the thousandths place is 5 or more, drop it and increase the number to the left of it by 1. A diamond that weighs 1.686 cts. would be rounded to 1.69 cts.

If the number to the left is a 9, you'll have to keep rounding and moving left. For example, a diamond that weighs 1.696 cts. would be rounded to 1.70 cts., and a 1.995-ct. weight would be rounded to 2.00 cts.

Using these rounding guidelines to think of weight in another way, a 1.52-ct. diamond can range in weight from 1.515 cts. to 1.524 cts.

Many in the diamond trade follow stricter rounding guidelines. This international practice is set by the World Federation of Diamond Bourses and followed by the GIA Laboratory and many other organizations. According to these guidelines, a diamond's weight can be rounded up to the next higher hundredth only if there's a nine in the thousandths place. A stone that weighs 1.768 cts. would be rounded to 1.76 cts., but one that weighs 1.769 cts. would be rounded to 1.77 cts.

It might have occurred to you that all of this concerns very small differences. But, as you'll learn, even small differences can make a significant difference in value.



The center diamond in this necklace weighs 0.399 ct., so accepted diamond trade practice would round it to 0.40 ct. In the US, the FTC would allow rounding to 0.40 ct. if it weighed 0.395 ct. or more.

## Computing Diamond Cost

There's an important element that you need to understand: *per-carat price*. It's the figure that many wholesalers use to quote the price of single diamonds and parcels. It's also a useful tool for comparing the prices of different diamonds.

You can figure out the total cost of a diamond if you know its weight and per-carat price. The formula is simple:

$$\text{Cost} = \text{Carat Weight} \times \text{Per-carat Price}$$

Here's an example using two different diamonds:

$$0.96 \text{ ct.} \times \$4,295 \text{ per carat} = \$4,123$$

$$1.02 \text{ cts.} \times \$5,150 \text{ per carat} = \$5,253$$

If you know the total price and the diamond's weight, you can compute the per-carat price. Here's how:

$$\text{Per-carat Price} = \text{Total Price} \div \text{Carat Weight}$$

Here's an example using the same two diamonds:

$$\$4,123.00 \text{ (Total Price)} \div 0.96 \text{ ct.} = \$4,295 \text{ per carat}$$

$$\$5,253.00 \text{ (Total Price)} \div 1.02 \text{ cts.} = \$5,150 \text{ per carat}$$

Note that these diamonds aren't much different in size, but their total and per-carat prices are very different. You'll learn why this is important and how you can use this information later in the assignment.

*Per-carat price*—The price of a gem divided by its weight.

## Practice Makes Perfect

Here are some sample problems you can use to practice computing cost and per-carat price. Round your answers to the nearest dollar.

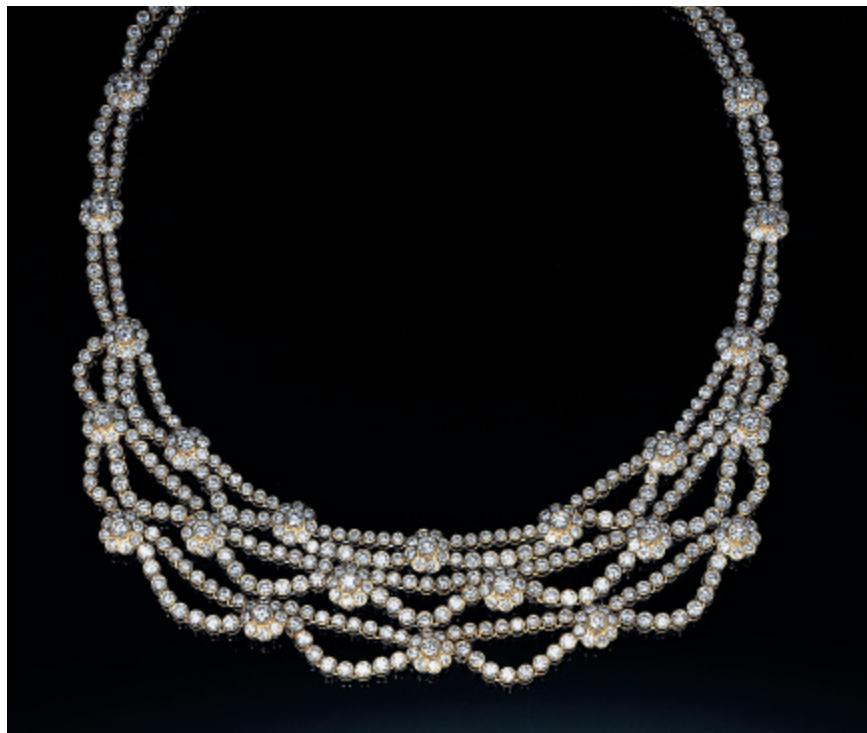
Don't send your answers to your instructors—these problems are for practice only. The answers are printed below.

1. What is the total cost of a 0.99-ct. diamond with a per-carat price of \$5,125?
2. A 0.77-ct. diamond wholesales for \$3,600. What is its per-carat price?
3. What is the per-carat price of a 0.24-ct. diamond that wholesales for \$1,895?
4. A 0.37-ct. diamond has a per-carat price of \$2,195. What is its total cost?

Answers: 1. \$5,074; 2. \$4,675; 3. \$7,896; 4. \$812



Both by Christie's Images Inc.



Large gems are much rarer than small ones, so two pieces of jewelry with similar total weights might have very different prices. The ring's center diamond weighs 23.34 cts., and the ring sold for over \$350,000. The necklace contains much smaller diamonds with a total weight of about 25 cts., and it's valued at \$25,000.



Many people think that a larger diamond is more expensive, but that isn't always true. Differences in color and clarity can make a small diamond much more valuable than a large one. The size difference of these diamonds is dramatic, but the 0.51-ct. D-color Flawless diamond is worth many times more than the 1.01-ct. P-color diamond with I<sub>3</sub> clarity.

## Diamond Weight and Value

Bigger is better—and costs more, right? As far as diamonds go, that's often the case. If all other value factors are equal, a 1.50-ct. diamond is much more valuable than a 0.50-ct. diamond. But if you compare a D-Flawless, 0.51-ct. diamond and a P-I<sub>3</sub>, 1.01-ct. diamond, which one do you think is more valuable? Because of their differences in color and clarity, it isn't the big one.

As you've learned throughout this course, a diamond's value is based on a combination of the Four Cs. That's a key tool you can use with retail customers—just as Carol did at the beginning of this assignment when she said, "We can certainly find you a larger diamond, but you'll either need to pay more or get one with a lower color or clarity grade—or maybe one that isn't cut as well as this one is."

In that single statement, she presented the customers with a clear choice—to get a larger diamond without paying more money they would have to trade down on one or more of the other value factors.

You might have noticed that Carol's customers didn't ask about price until late in the transaction. That's probably because, throughout her presentation, Carol assured them that they were getting a good value. That's often what people really want to know: "Am I getting a good value? Am I getting what I'm paying for?"

## FTC Guidelines on Diamond Weight

In 2001, the Federal Trade Commission (FTC) published its revised *Guides for the Jewelry, Precious Metals, and Pewter Industries*. As you learned in Assignment 1, the FTC has jurisdiction only in the US, but its guidelines are often accepted and followed by the international industry. Section 23.17 outlines the FTC's guidelines on misrepresentation of diamond weight:



- (a) *It is unfair or deceptive to misrepresent the weight of a diamond.*
- (b) *It is unfair or deceptive to use the word “point” or any abbreviation in any representation, advertising, marking, or labeling to describe the weight of a diamond, unless the weight is also stated as decimal parts of a carat (e.g., .25 points or .25 carat).*

*NOTE: A carat is a standard unit of weight for a diamond and is equivalent to 200 milligrams (1/5 gram). A point is one one-hundredth (1/100) of a carat.*

*(c) If diamond weight is stated as decimal parts of a carat (e.g., .47 carat), the stated figure should be accurate to the last decimal place. If diamond weight is stated to only one decimal place (e.g., .5 carat), the stated figure should be accurate to the second decimal place (e.g., “.5 carat” could represent a diamond weight between .495 and .504).*

*(d) If diamond weight is stated as fractional parts of a carat, a conspicuous disclosure of the fact that the diamond weight is not exact should be made in close proximity to the fractional representation and a disclosure of a reasonable range of weight for each fraction (or the weight tolerance being used) should also be made.*

*NOTE: When fractional representations of diamond weight are made, as described in 23.17(d) above, in catalogs or other printed materials, the disclosure of the fact that the actual diamond weight is within a specified range should be made conspicuously on every page where a fractional representation is made. Such disclosure may refer to a chart or other detailed explanation of the actual ranges used. For example, “Diamond weights are not exact; see chart on p. X for ranges.”*

When they did ask about price, here's what Carol said: "This is a very good-quality diamond, with good color and clarity. Large, good-quality diamonds like this are rare, so it's more valuable than a smaller diamond. This one sells for \$3,500." Even while quoting price, she was reinforcing the idea that they were getting a good value for their money.



Eric Welch/GIA

Electronic scales are extremely sensitive and accurate. Many weigh diamonds to thousandths of a carat.



Eric Welch/GIA

The simple balance scale is a gem-weighing tradition, but many jewelers today use electronic digital scales.

## Hanging in the Balance

The image of a jeweler with an eye-loupe in one eye and a simple balance scale in one hand is certainly nostalgic. It's also outdated in the modern jewelry trade. Most jewelry professionals use electronic balances to weigh loose diamonds.

Electronic balances come in both portable and desk models. Each has its advantages and disadvantages. The portable model is light enough to carry, but the larger desk models are generally more precise.

Most electronic scales weigh gems to a tenth of a point, or one thousandth (0.001) of a carat, with repeatable accuracy. Many also have the option of switching to gram or pennyweight readouts, which are used to weigh gold and other jewelry metals.

All balances, even electronic ones, are susceptible to error caused by movement and vibration. Even air movement can affect the most sensitive scales, so they have glass doors to guard against false readings. Their delicate tolerances mean they also have to be adjusted for accuracy, or recalibrated, regularly. Most come with standard weights so you can do the recalibrations yourself.

## Diamond Dimensions

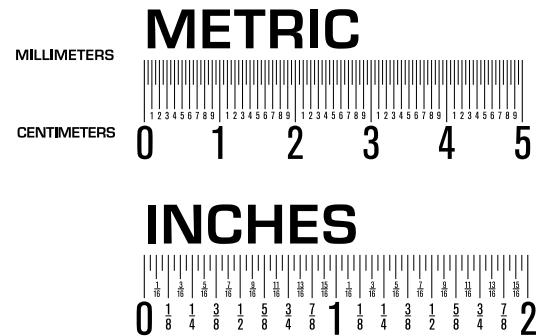
- How do a diamond's dimensions help you?
- How do you measure diamonds?
- What different kinds of instruments can you use to measure diamonds?

As you've seen, tiny differences in weight can make large differences in diamond value. That's why weighing a diamond requires precise equipment.

But precise weight is just part of the picture. Accurate dimension measurements are important, too. They're essential if you need to:

- Identify a stone
- Choose the proper size mounting
- Estimate the weight of mounted stones
- Analyze proportions

Diamond measurements are taken in thousandths, then rounded to hundredths, of a millimeter (0.01 mm). The illustration shows what a millimeter looks like, and how it compares to US inches. You have to imagine what a hundredth of a millimeter looks like—it's too small to show in print.



Diamond measurements are stated in hundredths of a millimeter: a unit too small to show here.

## Measuring Diamonds

The ability to measure diamond dimensions is the sign of a true professional. An important diamond dimension is *depth*, which is measured from top to bottom, or table to culet. Other important dimensions are a round diamond's diameter and a fancy-cut diamond's length and width.

The diameter of a round diamond is measured from one girdle edge to the opposite girdle edge, straight through the center. But no round diamond, no matter how well cut, is perfectly round. That's why gem professionals usually use the diamond's average girdle diameter.

As you learned in Assignment 4, you find it by measuring the diamond in at least six directions and then taking the minimum and maximum diameters, adding them, and dividing by two. If the diamond is mounted, measure between the prongs. Don't worry if you can't get six diameter measurements: Get as many as you can and then average the smallest and largest of those.

For example, if the diameter measurements are 4.23, 4.24, 4.26, 4.24, 4.27, and 4.28 mm, the minimum and maximum diameters are 4.23 and 4.28 mm. Here's the calculation:

$$4.23 + 4.28 = 8.51$$

$$8.51 \div 2 = 4.255 \text{ mm}$$

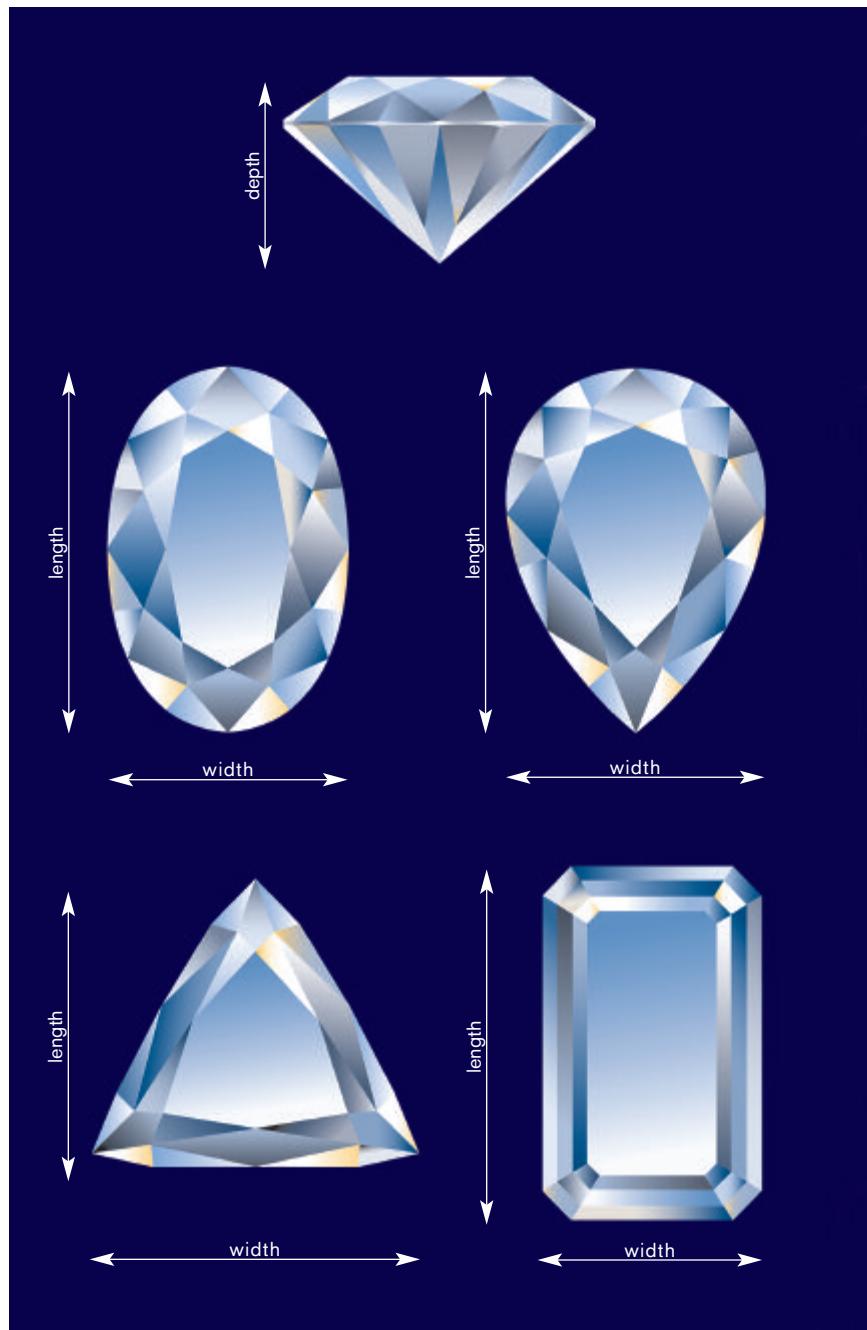
Round 4.255 to 4.26 mm. That's the average girdle diameter. Graders use it as a basis of comparison for many other diamond dimensions. They also use it in formulas for calculating diamond weight. You'll learn more about this in *Diamonds & Diamond Grading*.

When you measure a fancy shape, you use length and width instead of diameter. Length is the stone's longest dimension, end to end (not diagonally). Width is measured at a right angle ( $90^\circ$ ) to length.

It's easy to find the width on rectangular cuts: It's the shortest dimension. With a heart shape, width is the distance between the widest parts of the lobes. Length is the distance from the point to an imaginary line across the

## Key Concepts

When you record a diamond's dimensions, always specify whether they're actual or estimated.



Peter Johnston/GIA

Use length and width instead of diameter when you measure fancy shapes. The length is the longest dimension and the width is at a right angle to the length.

tops of the lobes. On triangular cuts, width is the distance from corner to corner on the side that's least like the other two, or on any side if they're all equal. The length is the distance from that side to the point across from it.

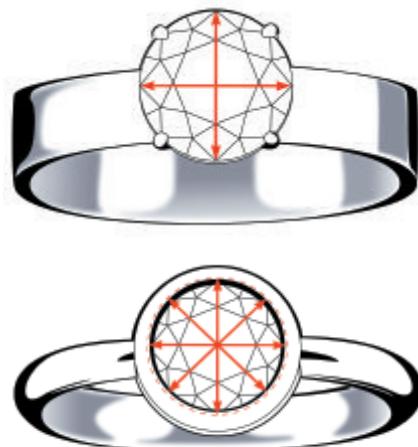
You can measure between the prongs on most settings, but you have to estimate the diameter of bezel-set stones, which have a metal rim running all the way around the girdle. On a bezel-set round brilliant, you estimate the



Diamond mountings can interfere with accurate measurements. For bezel settings, you have to estimate the location of the gem's girdle edges. Prong settings are a little easier: Just measure between the prongs in as many places as you can.

spot on the girdle where the bezel facets come to a point and measure from there. You use roughly the same method to estimate the length of mounted fancy cuts—marquises, for example—if prongs cover the points. On step cuts, you can judge the width of the outside facet by the width of the facets that aren't covered by the setting.

As you take measurements, it's important to record each one immediately. Be sure to specify if it's an actual or estimated measurement. With a round stone, record both the minimum and maximum diameters and depth; with a fancy shape, record length, width, and depth. Measurements are usually recorded in a series, separated by  $\times$ s or slashes. (For example: length  $\times$  width  $\times$  depth or length/width/depth.) The depth measurement is always stated last.



Both by Peter Johnston/GIA

To measure the diameters of a prong-set diamond (top), measure at places where the prongs don't cover the stone. On bezel-set diamonds, you have to estimate the location of the diamond's girdle edge under the mounting.



You might have to estimate the length of mounted fancy-cut diamonds if prongs cover their points.

## Diamond-measuring Instruments

The precise measurement requirements for diamonds obviously demand the right instruments. That's why there are instruments designed especially for use in the gem and jewelry industry.

### Millimeter Gauges

A millimeter gauge is a simple instrument, with jaws that hold the diamond and take the desired measurements. There are many millimeter gauges, but one of the most familiar of them is the Leveridge gauge.

Some models have a large dial marked in whole millimeters and tenths and a smaller one that records each 10-mm rotation. That way, each time the large dial goes around a full turn, it represents 10 millimeters.



Eric Welch/GIA

Millimeter gauges are especially useful because they can measure the dimensions of mounted gems as well as loose ones.

## Key Concepts

A millimeter gauge is very useful for measuring mounted stones.

To get an accurate measurement, you have to add the reading on the smaller dial to the one on the main dial. Otherwise, you could record 5.20 mm when the measurement is really 15.20 mm. To read the gauge, you have to estimate to hundredths of a millimeter. With a little experience, you can be very accurate.

Some of today's millimeter gauges have digital readouts, which eliminates the problem of adding the 10-mm reading. They also display hundredths, so you don't have to estimate.

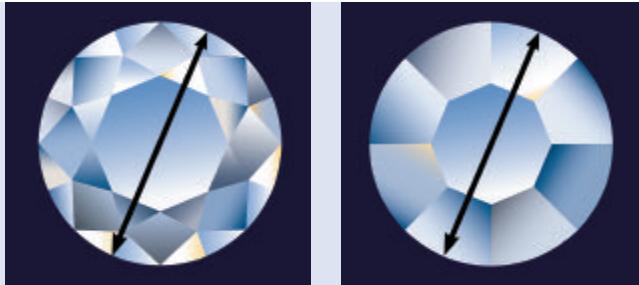
Millimeter gauges like the Leveridge gauge are fine for measuring loose stones, but their real advantage is that they measure mounted gems as well. For example, if the stone is in a setting that leaves parts of the girdle

## Estimating Weight

Well-cut diamonds have fairly standard proportions. For example, a 1.00-ct. round brilliant usually has a girdle diameter of approximately 6.50 mm. This consistency makes it possible to estimate the weight of a round brilliant by measuring its girdle diameter. The more precise your measurements, the closer your estimate will be to the diamond's actual weight.

The predictability is especially useful with smaller stones, which are difficult to measure accurately. But keep in mind that, if the small stones are single cuts, their weights will be slightly different from full cuts with the same dimensions.

Weight estimation is never exact. There are ways to estimate weight with better accuracy by using additional measurements and a set of specially developed formulas. You'll learn how to do this in the *GIA Diamonds & Diamond Grading* course.



Both by Peter Johnston/GIA

These charts provide a quick way to estimate the weight of a diamond according to its diameter. The relationship between diameter and weight is different for full-cut and single-cut diamonds, so there are two sets of estimates.

### FULL CUTS

Diameter	Approx. Weight
1.3 mm	0.01 ct.
1.7	0.02
1.8	
1.9	
2.0	0.03
2.1	
2.2	0.04
2.3	
2.4	0.05
2.5	
2.6	0.06
2.7	
2.8	0.07
2.9	0.08
3.0	
3.1	0.09
3.2	0.10
3.3	
3.4	0.11
3.5	
3.6	0.125
3.7	
3.8	0.14
	0.15
	0.16
	0.17
	0.18
	0.19
	0.20

### SINGLE CUTS

Diameter	Approx. Weight
1.0 mm	0.005 ct.
1.1	
1.2	
1.3	0.01
1.4	
1.5	0.015
1.6	
1.7	0.02
1.8	
1.9	0.03
2.0	0.035

(Single cuts larger than 0.04 carat are rare.)

exposed, you can use the gauge to take diameter measurements at the exposed areas.

Measuring the depth of a mounted diamond is easy if you can get the lower jaw of the gauge squarely on the culet. Place the upper jaw on the center of the table and read and record the measurement. Sometimes, the mounting gets in the way. If there's a small hole in the back or if the stone is set unusually high, you can use a special attachment that comes with the gauge. If not, you might have to estimate.

The jaws on some millimeter gauges are spring operated. If you let go, they'll snap shut. This can damage the stone or the instrument or both. Always follow the operating and maintenance instructions that come with the instrument.



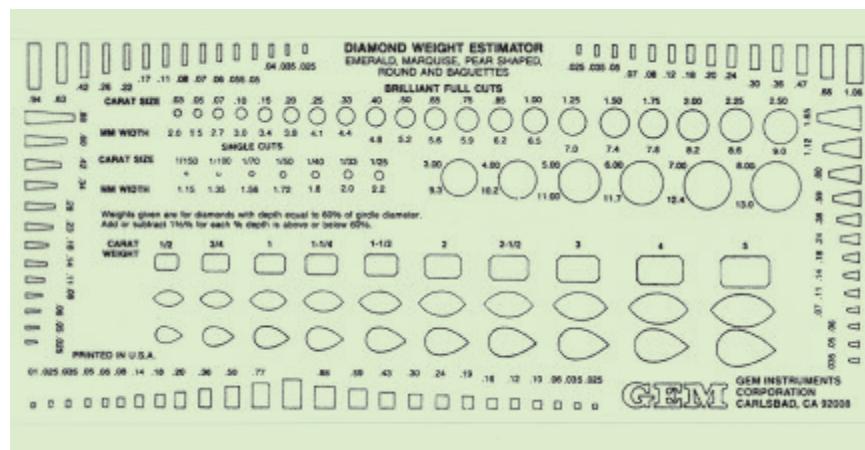
Eric Welch/GIA

The openings in hole gauges are sized to various diamond measurements. They can be used to estimate diamond dimensions as well as weights.



Joel Beeson/GIA

Some hole gauges have round tabs in various sizes. The stone setter can match a tab to the opening in a mounting to determine what size stone would fit.



A template is a transparent piece of plastic with outlines of diamonds of various shapes and sizes. It's also printed with an approximate weight for each size.

## Hole Gauges and Templates

Hole gauges are useful for estimating a diamond's dimensions. They're simply sheets of plastic or metal with holes that correspond to various diamond girdle measurements. They also often give an approximate weight for each diameter. Some hole gauges have round tabs that stone setters use to measure the spaces in settings that require replacement stones.

Transparent templates are used to visually estimate diamond weights. They're especially useful for estimating the weights of small diamonds in multi-stone settings.

Templates are printed with outlines of diamonds in several shapes and sizes. Each outline is labeled with an approximate carat weight. Simply match the diamond being examined with the outline that most closely matches it and read the carat weight on the template. While this is a good way to get a quick reading of a diamond's size, weights obtained this way are approximate. Templates only work for estimating diamond weights: They don't work for colored stones.

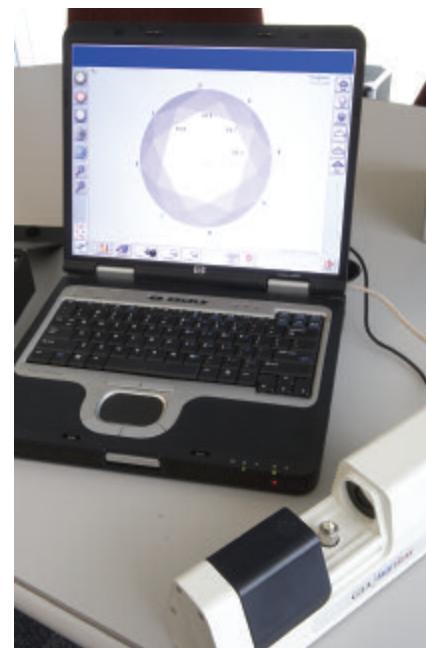
## Optical Measuring Devices

An optical measuring device scans and measures a diamond, then projects its outline image. The system also provides the measurements and proportions you need to analyze and describe a diamond. The whole process takes just a few seconds, and it works for loose diamonds—fancy shapes as well as rounds.

These systems do more than measure diamonds. They also perform some complex proportion calculations. Among other things, they calculate how much a diamond of those particular dimensions should weigh. If the calculated weight differs significantly from the actual weight determined on the scale, it's a good indication that the stone is not a diamond.

Originally, optical measuring devices were very expensive and hard to calibrate and maintain. They're still more costly than manual gauges, but they have become more affordable, accurate, and more readily available.

No matter which instrument or measuring system you use, after you take and record the measurements, it's a good idea to pause and take another look at the stone to make sure the figures make sense. You'll avoid embarrassing and costly errors if you recognize right away that the weight or measurements don't look right.



Eric Welch/GIA

The GIA FacetScan is an optical measuring device for loose diamonds. It scans and measures a stone, then projects its image and proportions on a screen using special software.

*Key Concepts*  
Always examine the  
diamond after recording  
the measurements to be  
sure they make sense.

## Selling Carat Weight

- How does carat weight's relationship to rarity build value?
- What are magic sizes and why are they useful in retail sales presentations?

Carat weight is usually one of the easiest things to explain in a sales presentation. But as you've seen in this assignment, it's not as simple as some people might think.

One way you can assist your customers with carat weight decisions is to use the "magic size" concept. Some weights are considered "magic sizes": half carat, three-quarter carat, one carat, etc. The influence of the magic size effect is a little complicated. But if you understand it, you can make it work for you.



Valerie Power/GIA

At the GIA Laboratory, professional graders use sophisticated equipment to examine diamonds. The lab issues detailed diamond reports to document their findings.

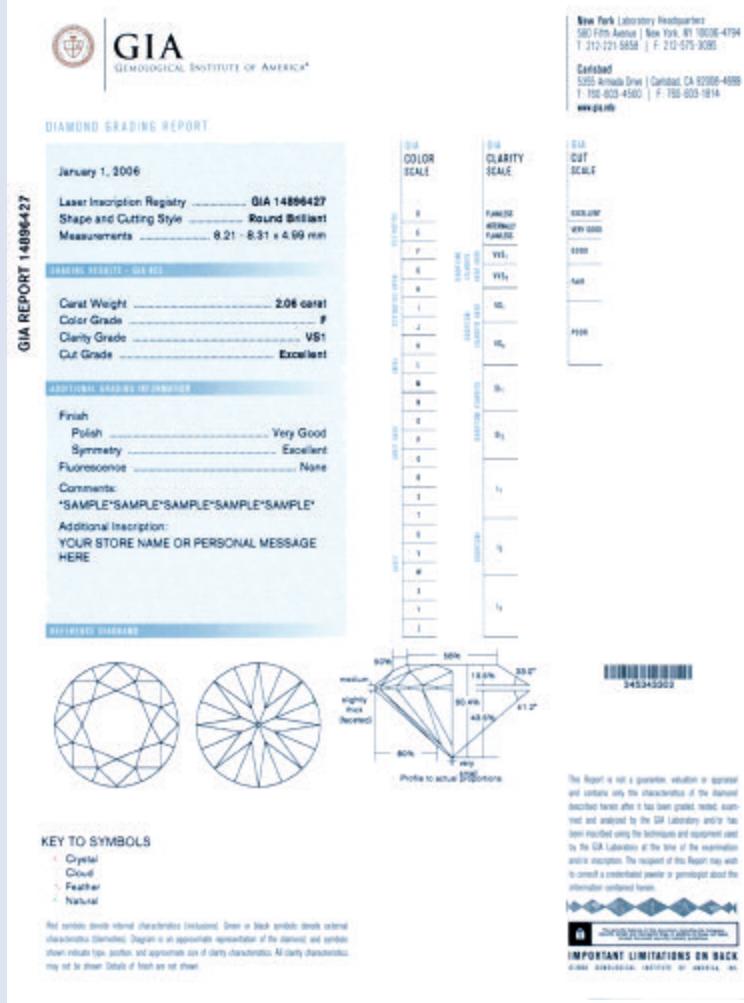
## Weight, Dimensions, and GIA Diamond Reports

On GIA diamond reports, the very first measurements made and recorded are of the diamond's dimensions and weight. Most of the diamond's remaining proportions are calculated from those basic statistics.

The diameter measurements are listed as a range between the smallest and the largest. The measured—not estimated—depth follows them.

Each diamond is weighed on an electronic scale. Following industry practice, the grader weighs a diamond to thousandths of a carat, and then rounds up to hundredths only if the last digit is a 9.

One important difference between the GIA Laboratory and most operations is the type of equipment used. While most instruments used in the industry can provide very accurate measurements, the GIA lab uses an extremely sophisticated and precise optical measuring device. The device is also very expensive, but prices for smaller versions are now in a range that makes the technology more affordable for many retail and wholesale operations.



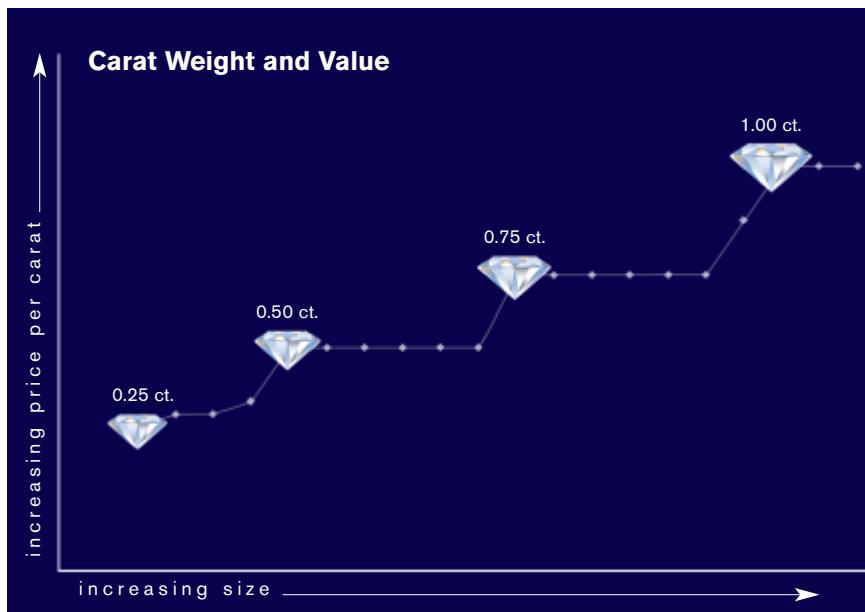
For diamonds under one carat, GIA offers a condensed diamond grading report called the Diamond Dossier®.

Diamond grading reports from the GIA Laboratory include statements of dimensions and weight.



Eric Welch/GIA

When a diamond is accompanied by a GIA report, the buyer can be sure of the stone's exact dimensions, weight, and quality.



Peter Johnston/GIA

In diamonds that are equal in every other way, value increases as size increases. At certain weight boundaries, called "magic sizes," value increases dramatically. This is especially true at the magic one-carat size.



Maha Tannous/GIA

You can hardly see the difference between these diamonds, which all weigh around 1.00 ct., but their prices are very different. The stones that weigh just over 1.00 ct. are worth much more than the ones that weigh just under 1.00 ct.

For example, if you think back to earlier examples, you'll remember that one diamond weighed 0.96 ct. and the other weighed 1.02 cts. But the total price of the 0.96-ct. diamond was \$4,123 (\$4,295 per carat), while the total price of the 1.02-ct. diamond was \$5,253 (\$5,150 per carat). The price difference between the two diamonds was \$1,130, or \$855 per carat.

There's not much difference in their weights, but if both are D-color round brilliants with identical clarity and cut, the size makes all the difference. They really don't look much different, but if your customer's heart is set on the one-carat size, the difference is enormous. It's the fact that the second stone is slightly over the "magic" one-carat size that gives it a 20 percent difference in price with only a 6-pt. (0.06-ct.) difference in weight.

You can also use your knowledge of magic sizes when your customer can't afford the price of a larger diamond, or when the size difference isn't very important to them. You can show them another diamond that's only a little smaller, but that costs much less. The size difference wouldn't be obvious, so the customer gets the look of the bigger diamond without the extra cost that goes with the magic size.

When you explain how a small increase in weight can cause a large increase in value, make sure that you stress rarity. A large diamond is much more rare and valuable than a small one. But this is only true if all other value factors are equal. In some cases, bigger doesn't always mean more expensive.

A large diamond is extremely rare, but so is a diamond with top clarity or one with the highest color grade. Very few diamonds possess all three, and those usually demand the best possible cut.



Eric Welch/GIA

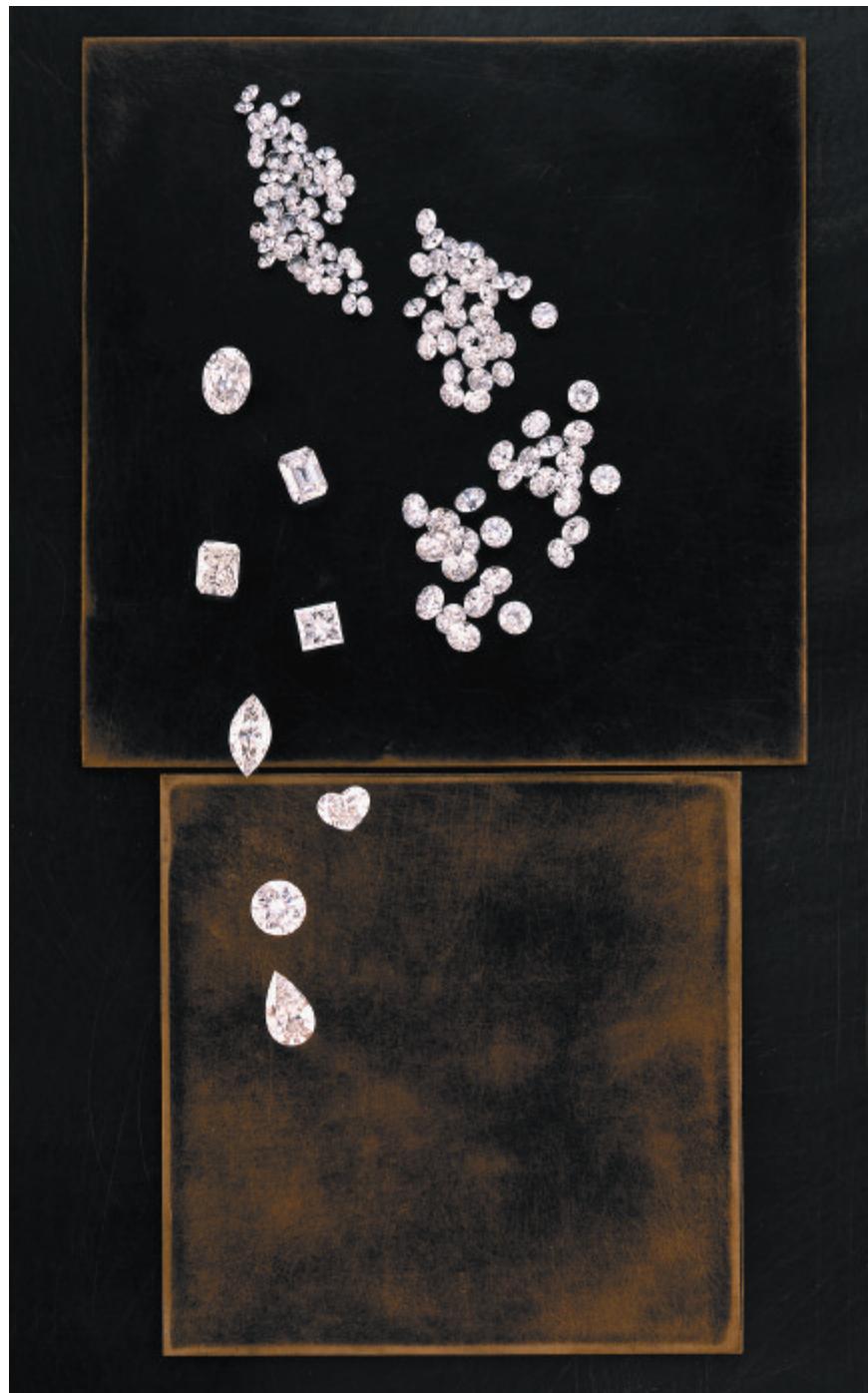
Few customers can buy diamonds that rate highly in all Four Cs. With your gem knowledge, you can help them choose the best combination of qualities to fit their budget.

You can help your customers balance their needs for one of the Four Cs against the others. But if they really want a big diamond, it's your job to find them the biggest diamond they can afford. This means they might have to buy a diamond with a lower clarity or color grade. On the other hand, some customers might really want a diamond with high color and clarity, and not consider large size as important.

It's not too early to start using what you've learned in this assignment—and in the course so far—to help your customers make comfortable, informed buying decisions. Just remember that, just as different customers need different kinds of information about carat weight, some will be more interested in other aspects of diamond quality—the other Four Cs. Some will be more concerned with clarity, some will be curious about color, others will be more concerned with cut.

## Key Concepts

Stress rarity to explain value.



No matter what its size, each diamond is a dazzling treasure. Use what you've learned in this assignment to accurately and enthusiastically present diamonds of all sizes to your customers.

As you've learned throughout this course, your job is to focus on the customer so you can deliver the information they need in a form they can use. The assignments you've completed so far are essential to developing the skills to help you do that. The next two assignments will help you focus even more on those skills.

## Key Concepts

**A diamond's carat weight and dimensions influence its value.**

**The majority of diamonds used in jewelry weigh under one carat.**

**Make sure that your description of a diamond's weight is clear, understandable, and accurate.**

**Don't use trade terms to express gem weight to customers.**

**Most jewelry professionals use electronic balances to weigh unmounted diamonds.**

**When you record a diamond's dimensions, always specify whether they're actual or estimated.**

**A millimeter gauge is very useful for measuring mounted stones.**

**Always examine the diamond after recording the measurements to be sure they make sense.**

**Stress rarity to explain value.**



## Key Terms

*Carat*—The international unit of measurement for gem weight. One carat equals 1/5 of a gram (0.200 g).

*Depth*—The distance from the table to the culet of a polished gem.

*Light carat*—A trade term for a diamond that weighs between 0.96 ct. and 0.99 ct.

*Light half*—A trade term for a diamond that weighs between 0.45 ct. and 0.49 ct.

*Melee*—Very small faceted diamonds.

*Per-carat price*—The price of a gem divided by its weight.

*Total gem weight*—The combined weight of all the stones in a piece of jewelry that contains a variety of gems.

*Total weight*—The combined weight of all the diamonds in a piece of jewelry that only contains diamonds.

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