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RATIOS & UNIT RATES

Solve
& Draw

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ACTIVATED
EDUCATION

RATIOS & UNIT RATE

Solve & Draw

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RATIOS & UNIT RATES

Solve & Draw

DIRECTIONS

Solve and Draw no-prep printables for are an easy, no-prep way to make ratio and unit rate practice more engaging. Inspired by a group of reluctant mathematicians with amazing creativity, these printables are designed to engage students in math practice with an artistic twist. This resource may be used as a fun quiz or review. Perfect for the sub tub or a math center.

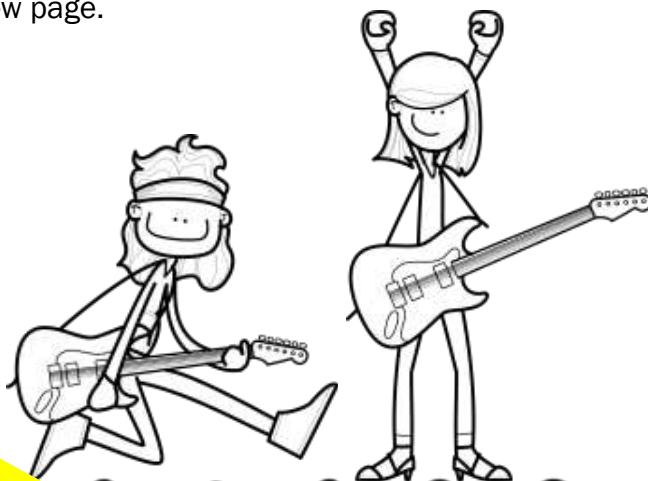
How Solve & Draw Activities Work

Students solve the ratio problems and add to the Rock Star themed drawing based on their answers. Students are directed in what they need to add to the drawing but are able to use their own artistic style and desired level of detail. Coloring is optional; pages look wonderful when fully colored but do not need to be.

An optional challenge page is included that can be copied on the back of the worksheet – this gives students an extension opportunity by asking them to write a ratio problem that fits one of the incorrect drawing prompts or to write a new ratio problem and their own drawing prompts. This works well to extend thinking and for early finishers.

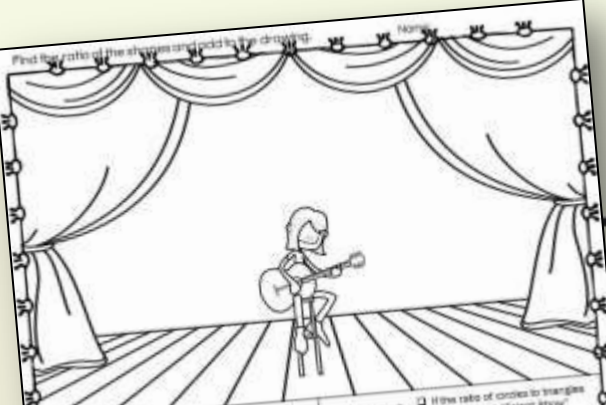
Included Skills

Identifying the ratio of shapes, writing equivalent ratios, writing ratios from phrases, identifying unit rates, better buys, and understanding unit rates are all included as well as one mixed review page.



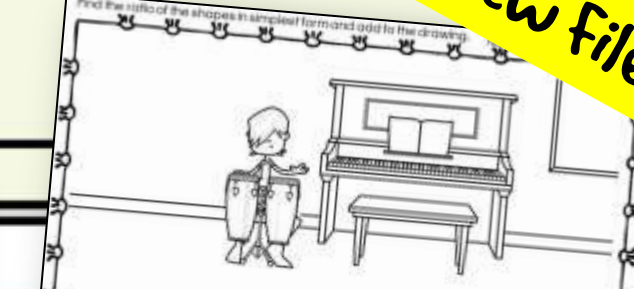
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Find the ratio of the shapes and add to the drawing. Name: _____



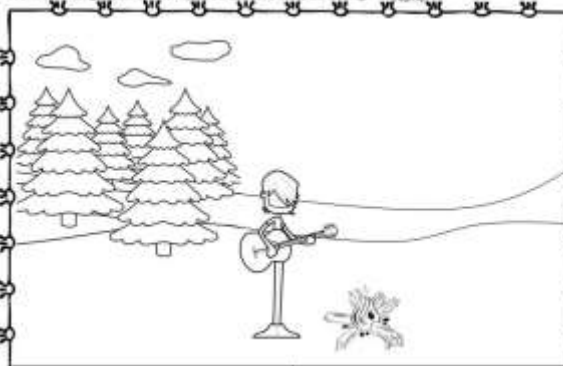
$\square\square\square$ $\circ\square\square$ If the ratio of squares to circles is 4:3, draw a headset style microphone on the boy. If the ratio of squares to circles is 4:7, draw a microphone on a stand.	$\circ\square\square$ $\circ\square\square$ $\triangle\square\square$ If the ratio of circles to triangles is 6:5, draw a "boom" style poster on the back wall. If the ratio of circles to triangles is 5:6, draw a drummer on stage.
$\triangle\square\square$ $\square\square\square$ $\square\square\square$ If the ratio of triangles to squares is 6:2, draw a hat on the boy. If the ratio of triangles to squares is 2:5, draw a bow tie on the boy.	$\square\square\square$ $\circ\square\square$ $\square\square\square$ If the ratio of squares to circles is 3:2, draw two stage lights near the ceiling. If the ratio of squares to circles is 3:5, draw three stars hanging from the ceiling.
$\circ\square\square$ $\circ\square\square$ $\triangle\square\square$ $\triangle\square\square$ If the ratio of circles to triangles is 4:6, draw a person peeking out from behind the curtain. If the ratio of circles to triangles is 5:6, draw a scarf on the neck of the guitar.	$\star\square\square$ $\star\square\square$ $\star\square\square$ $\star\square\square$ If the ratio of stars to triangles is 4:2, draw a keyboard player on stage. If the ratio of stars to triangles is 8:3, draw music notes coming from the original guitar.
$\star\square\square$ $\circ\square\square$ $\circ\square\square$ If the ratio of stars to circles is 1:4, draw a singer on stage. If the ratio of stars to circles is 1:5, draw another guitarist on stage.	$\square\square\square$ $\star\square\square$ $\star\square\square$ $\star\square\square$ If the ratio of squares to stars is 3:5, draw three roses lying on stage. If the ratio of squares to stars is 3:4, draw a giant music note on the wall.

Find the ratio of the shapes in simplest form and add to the drawing. Name: _____



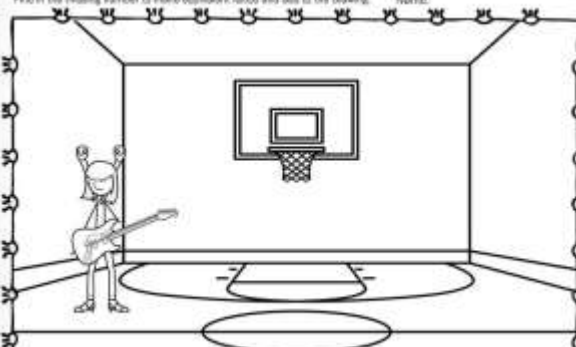
$\circ\square\square$ $\circ\square\square$ $\circ\square\square$ If the ratio of base drums to electric guitars is 2:2, draw another drummer next to the original drummer. If the ratio of base drums to electric guitars is 4:6, draw a vase on the top of the piano.	$\circ\square\square$ $\circ\square\square$ $\circ\square\square$ If the ratio of conga drums to electric guitars is 6:3, draw a rug on the floor. If the ratio of conga drums to electric guitars is 2:3, draw a poster of your favorite musician on the wall.	$\circ\square\square$ $\circ\square\square$ $\circ\square\square$ If the ratio of acoustic guitars to conga drums is 2:5, draw someone playing a guitar. If the ratio of acoustic guitars to conga drums is 1:2, draw someone playing a harmonica.
$\circ\square\square$ $\circ\square\square$ $\circ\square\square$ If the ratio of symbols to acoustic guitars is 1:6, draw music notes on the pieces that are on the piano. If the ratio of symbols to acoustic guitars is 1:5, draw a hat on the original drummer.	$\circ\square\square$ $\circ\square\square$ $\circ\square\square$ If the ratio of symbols to conga drums is 2:2, draw someone playing the piano. If the ratio of base drums to conga drums is 1:1, draw someone playing a recorder.	$\circ\square\square$ $\circ\square\square$ $\circ\square\square$ If the ratio of acoustic guitars to symbols is 2:5, draw a small musician on the floor. If the ratio of acoustic guitars to symbols is 3:2, draw a microphone on a stand.

Find the missing number to make equivalent ratios and add to the drawing. Name: _____



$\frac{6}{8} = \frac{\quad}{4}$ If the missing numerator is 2, draw a mountain in the background. If the missing numerator is 3, draw another cloud in the sky.	$\frac{2}{7} = \frac{4}{\quad}$ If the missing denominator is 9, draw someone roasting a hot dog in the fire. If the missing denominator is 14, draw someone toasting a marshmallow in the fire.
$\frac{3}{1} = \frac{9}{\quad}$ If the missing denominator is 6, draw a river in front of the trees. If the missing denominator is 3, draw a singer beside the guitar player.	$\frac{\quad}{6} = \frac{15}{10}$ If the missing numerator is 4, draw a hawk flying in the sky. If the missing numerator is 5, draw a dog sitting near the guitar player.
$\frac{\quad}{5} = \frac{4}{10}$ If the missing numerator is 2, draw a dog by the fire. If the missing numerator is 1, draw a tent in the background.	$\frac{1}{2} = \frac{3}{\quad}$ If the missing denominator is 4, draw a cooler near the fire. If the missing denominator is 6, draw a tent on the left side of the page.
$\frac{2}{\quad} = \frac{8}{12}$ If the missing denominator is 8, draw an owl in one of the trees. If the missing denominator is 6, draw a lake coming out of the woods.	$\frac{1}{\quad} = \frac{2}{8}$ If the missing denominator is 4, draw a hat on the guitar player. If the missing denominator is 6, draw a lake in the background.

Find the missing number to make equivalent ratios and add to the drawing. Name: _____

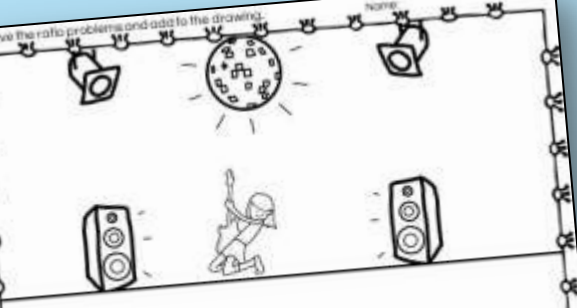


$\frac{8}{9} = \frac{\quad}{18}$ If the missing numerator is 15, draw a cheerleader standing beside guitar player. If the missing numerator is 16, draw stripes on the girl's pants.	$\frac{3}{5} = \frac{\quad}{20}$ If the missing numerator is 12, draw your school's mascot running across the gym. If the missing numerator is 15, draw a banner that says "Go Team!" on the right wall.
$\frac{2}{1} = \frac{\quad}{2}$ If the missing numerator is 2, draw a flag on the left wall. If the missing numerator is 4, draw a banner that says "Pip Pop Today!" on the left wall.	$\frac{2}{4} = \frac{\quad}{16}$ If the missing numerator is 8, draw a pennant in the guitarist's right hand. If the missing numerator is 4, draw a microphone in the guitarist's left hand.
$\frac{2}{\quad} = \frac{6}{27}$ If the missing denominator is 9, draw streamers around the basketball hoop. If the missing denominator is 7, draw balloons on the basketball hoop.	$\frac{1}{7} = \frac{6}{\quad}$ If the missing denominator is 13, draw a basketball player on the right side of the page. If the missing denominator is 42, draw a basketball player on the right side of the page.
$\frac{4}{7} = \frac{8}{\quad}$ If the missing denominator is 14, draw a pyramid of three cheerleaders under the hoop. If the missing denominator is 11, draw two big lights on the ceiling.	$\frac{1}{\quad} = \frac{3}{9}$ If the missing denominator is 6, draw a basketball player spinning a ball on her finger. If the missing denominator is 3, draw a basketball player dunking the ball.

Preview File

Solve the ratio problems and add to the drawing.

NAME: _____



3 guitarists to 1 lead singer ☐ If the ratio of guitarists to lead singers is 1:3, draw a bass player. ☐ If the ratio of guitarists to lead singers is 3:1, draw a lead singer.	5 backup singers to 3 dancers ☐ If the ratio of backup singers to dancers is 5:3, draw three stars hanging from the ceiling. ☐ If the ratio of backup singers to dancers is 3:5, draw three hearts hanging from the ceiling.
2 speakers to 1 disco ball ☐ If the ratio of speakers to disco balls is 2:1, draw another speaker. ☐ If the ratio of speakers to disco balls is 1:1, draw another disco ball.	6 instruments to 7 band members ☐ If the ratio of instruments to band members is 7:6, draw a dancer on the right side of the stage. ☐ If the ratio of instruments to band members is 6:7, draw a dancer on the left side of the stage.
6 microphones to 5 drums ☐ If the ratio of microphones to drums is 3:2, draw three people dancing in front of the stage. ☐ If the ratio of microphones to drums is 6:5, draw four people dancing in front of the stage.	7 stage lights to 2 speakers ☐ If the ratio of stage lights to speakers is 7:2, draw a giant screen behind the stage. ☐ If the ratio of stage lights to speakers is 2:7, draw a stage curtain on the side of the stage.
2 dancers to 3 bass guitarists ☐ If the ratio of dancers to guitarists is 2:3, draw a hat on the original guitarist. ☐ If the ratio of dancers to guitarists is 3:2, draw a trumpet on the original guitarist.	1 lead singer to 3 band members ☐ If the ratio of lead singers to band members is 1:3, draw two more stage lights. ☐ If the ratio of lead singers to band members is 3:1, draw three more stage lights.

Write the ratio in its simplest form and add to the drawing.

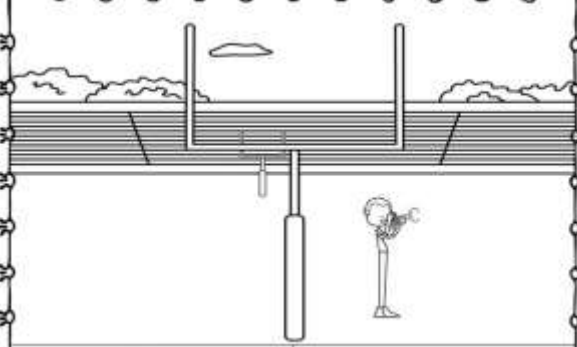
NAME: _____



18 drummers to 12 singers ☐ If 4:3 is the simplest form, draw a mailbox on the right side of the garage. ☐ If 6:5 is the simplest form, draw a small bush on the right side of the garage.	40 drumsticks to 3 drum kits ☐ If 15:1 is the simplest form, draw a bicycle in the garage. ☐ If 9:3 is the simplest form, draw a motorcycle in the garage.
3 guitarists to 1 dancer ☐ If 1:3 is the simplest form, draw two trees on the rooftop. ☐ If 3:1 is the simplest form, draw one bird on the rooftop.	6 electric guitars to 3 keyboards ☐ If 6:3 is the simplest form, draw a keyboard beside the drums. ☐ If 2:1 is the simplest form, draw a bongo drum beside the drums.
36 microphones to 18 speakers ☐ If 2:1 is the simplest form, draw a cat in the doorway. ☐ If 2:1 is the simplest form, draw a dog in the doorway.	7 dancers to 8 singers ☐ If 7:8 is the simplest form, draw a microphone beside the drums. ☐ If 1:2 is the simplest form, draw a big speaker beside the drums.
21 band members to 3 concerts ☐ If 7:1 is the simplest form, draw two clouds in the sky. ☐ If 3:1 is the simplest form, draw a rainbow in the sky.	12 fans to 3 band members ☐ If 4:1 is the simplest form, draw a grumpy neighbor outside the garage. ☐ If 3:1 is the simplest form, write your initials on the bass drum.

Find the unit rate and add to the drawing.

NAME: _____



6 band members in 2 instruments ☐ If the unit rate is 3 band members per instrument, draw a band hat on the trumpet player. ☐ If the unit rate is 2 band members per instrument, draw another trumpet player.	24 hotdogs to 12 sodas ☐ If the unit rate is 6 hotdogs per soda, draw a drummer. ☐ If the unit rate is 2 hotdogs per soda, draw a band member playing the tuba.
3 trumpets to 3 tubas ☐ If the unit rate is 1 trumpet per tuba, draw a tuba player. ☐ If the unit rate is 1 trumpet per tuba, draw a your favorite team mascot on the field.	8 jerseys to 2 players ☐ If the unit rate is 4 jerseys per player, draw football players in a huddle. ☐ If the unit rate is 2 jerseys per player, draw 3 players standing on the sidelines.
36 helmets to 6 footballs ☐ If the unit rate is 6 helmets per football, draw a tuba player. ☐ If the unit rate is 3 helmets per football, draw a plump in the sky above the sidelines.	16 water bottles to 4 quarters ☐ If the unit rate is 12 water bottles per quarter, draw the sun in the sky. ☐ If the unit rate is 4 water bottles per quarter, draw a coach on the sidelines.
150 fans to 30 mascots ☐ If the unit rate is 15 fans per mascot, draw 15 fans on the bleachers. ☐ If the unit rate is 10 fans per mascot, draw 10 fans on the bleachers.	45 yards to 5 plays ☐ If the unit rate is 9 yards per play, draw a band member holding a flag. ☐ If the unit rate is 5 yards per play, draw your favorite singer on the field, singing the national anthem.

Find the unit rate and determine the better buy, then add to the drawing.

NAME: _____



3 mp3 downloads for \$6.75 or 12 downloads for \$15.00 Unit Rates = _____ ☐ If the better buy is 3 downloads, draw another singer on the right side of the dance floor. ☐ If the better buy is 12 batteries, draw a speaker behind the singer.	4 pecks of gum for \$2.40 or 5 pecks for \$3.20 Unit Rates = _____ ☐ If the better buy is 4 pecks, draw a gym bag on the floor. ☐ If the better buy is 5 pecks, draw a poster on the wall that says "Dance!"
12 T-shirts for \$30.00 or 20 T-shirts for \$40.00 Unit Rates = _____ ☐ If the better buy is 12 T-shirts, draw a hat on the original singer. ☐ If the better buy is 20 T-shirts, draw sunglasses on the original singer.	2 bags of ice for \$1.50 or 3 bags of ice for \$1.80 Unit Rates = _____ ☐ If the better buy is 2 bags of ice, draw a stereo in the background. ☐ If the better buy is 3 bags of ice, draw a keyboard in the background.
3 scarves for \$22.00 or 3 scarves for \$33.00 Unit Rates = _____ ☐ If the better buy is 2 scarves, draw two back up dancers by the mirrors. ☐ If the better buy is 3 scarves, draw one back up dancer by the mirrors.	4 hats for \$26.00 or 5 hats for \$34.50 Unit Rates = _____ ☐ If the better buy is 4 hats, draw music notes coming from the original singer. ☐ If the better buy is 5 hats, draw a backup singer beside the original singer.
16 oz. of sparkling water for \$4.00 or 36 oz. of sparkling water for \$10.80 Unit Rates = _____ ☐ If the better buy is 16 oz., draw a water bottle by the original singer. ☐ If the better buy is 36 oz., draw a water bottle by the mirrors.	17 oz. of energy drink for \$1.80 or 16 oz. of energy drink for \$3.20 Unit Rates = _____ ☐ If the better buy is 12 oz., draw a sweatband on the original singer. ☐ If the better buy is 16 oz., draw a clock on the wall.

Find the ratio and add to the drawing.

MUSIC STORE

1) Mr. Hendrix gives 2 music lessons per hour. At that rate, how long will it take for him to give 12 lessons?

☐ If it would take 6 hours, draw a strap on the guitar.

☐ If it would take 8 hours, draw 3 guitars hanging on a rack on the back wall.

2) Joe can tune 8 pianos per day. How many pianos can Joe tune in 3 days?

☐ If he tunes 24 pianos, draw a keyboard by the window.

☐ If he tunes 12 pianos, draw a piano by the window.

3) Lulu unloads stage equipment at a rate of one box every 45 seconds. How many boxes can Lulu unload in 15 minutes?

☐ If she unloads 12 boxes, draw a kid peeking in the window.

☐ If she unloads 20 boxes, draw a kid by the door.

4) Lily slides across the stage at a rate of 3 feet per second. How many feet will she travel in 30 seconds?

☐ If she slides 30 feet, draw a drum set in the bottom left corner.

☐ If she slides 90 feet, draw a bongo drum in the bottom left corner.

5) A tour bus drives at an average speed of 60 miles per hour. How long will it take to drive 480 miles to the next concert location?

☐ If it takes 12 hours, draw a "20% Off Sale" sign on the door.

☐ If it takes 8 hours, draw a "40% Off Sale" sign on the door.

6) The music shop sells a pack of guitar strings for \$15. At the end of the day, they've sold \$180 of strings. How many packs did they sell?

☐ If they sold 12 packs, draw a speaker plugged in to the original guitar.

☐ If they sold 14 packs, draw a guitar case by the original guitar.

Find the ratio and add to the drawing.

MUSIC STORE

1) Mr. Hendrix gives music lessons that are 90 minutes long. At that rate, how long will it take for him to give 5 lessons?

☐ If it would take 6.5 hours, draw a strap on the guitar.

☐ If it would take 7.5 hours, draw 3 guitars hanging on the back wall.

2) Joe can tune 8 pianos in one eight-hour long work day. How many pianos can he tune in one hour?

☐ If he tunes 4 pianos per hour, draw a piano by the window.

☐ If he tunes 1 piano per hour, draw a keyboard by the window.

3) Lulu unloads 15 boxes of stage in 15 minutes. At this rate, how long would it take her to unload 27 boxes?

☐ If it would take her 30 minutes, draw a kid peeking in the window.

☐ If it would take her 27 minutes, draw a kid by the door.

4) Lily slides across the stage at a rate of 3 feet per second. How many seconds will it take her to travel 25 feet?

☐ If it takes her 70 seconds, draw a drum set in the bottom left corner.

☐ If it takes her 8.5 seconds, draw a bongo drum in the bottom left corner.

5) A tour bus takes 7 hours and 45 minutes drive 480.5 miles to the next concert location. How many miles per hour was the bus driving?

☐ If the bus was driving 64 mph, draw a "20% Off Sale" sign on the door.

☐ If the bus was driving 62 mph, draw a "40% Off Sale" sign on the door.

6) The music shop sells a pack of guitar strings for \$15.99. At the end of the day, they've sold \$191.88 of strings. How many packs did they sell?

☐ If they sold 12 packs, draw a speaker plugged in to the original guitar.

☐ If they sold 14 packs, draw a guitar case by the original guitar.

Solve the ratio problems and add to the drawing.

MUSIC STORE

1) $\frac{\quad}{3} = \frac{24}{18}$

☐ If the missing numerator is 4, draw a hat on the conductor.

☐ If the missing numerator is 6, draw a bow tie on one of the trumpet players.

2) 3 trumpet players to 21 audience members

☐ If the ratio of trumpet players to audience members is 1:7, draw a music stand in front of the trumpet players.

☐ If the ratio of trumpet players to audience members is 7:1, draw another trumpet player.

3) Mr. Forte drinks 8 oz. of water during orchestra practice each day. If he drinks it at a rate of 1 oz. per 20 minutes, how long will it take him to finish the water?

☐ If it would take him 60 minutes, draw two bass players in the background.

☐ If it would take him 1 hour and 40 minutes, draw a violin player in the background.

4) 6 musicians to 2 music stands

☐ If the ratio of musicians to music stands is 2:1, draw a drum player in the background.

☐ If the ratio of musicians to music stands is 3:1, draw a flute player in the middle of the page.

5) 2 violin strings for \$9.50 or 4 violin strings for \$19.40

Unit Rates = _____

☐ If the better buy is 2 strings, draw a violin player in front of the trumpet players.

☐ If the better buy is 4 strings, draw a cello player in front of the trumpet players.

6) The orchestra is playing at a rate of $2\frac{1}{4}$ songs per hour. At that rate, how long will it take them to play 9 songs?

☐ If it will take 5 hours, draw a clarinet player on the left side of the page.

☐ If it will take 4 hours, draw a flute player on the left side of the page.

Challenge Page

NAME: _____

Challenge #1:

Choose a drawing prompt from the page what was not correct. Create a new ratio problem that fits the prompt, and add the drawing to the original page.

Example:

Original Ratio Problem	Drawing Prompt	New Ratio Problem
$\frac{\square\square\square\square}{\square\square\square}$	☒ If the ratio of squares to circles is 4:3, draw a headset style microphone on the boy.	$\frac{\square\square\square\square}{\square\square\square}$
	☒ If the ratio of squares to circles is 4:7, draw a microphone on a stand.	$\frac{\square\square\square\square}{\square\square\square}$

Challenge #1 Workspace:

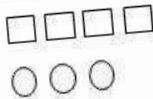
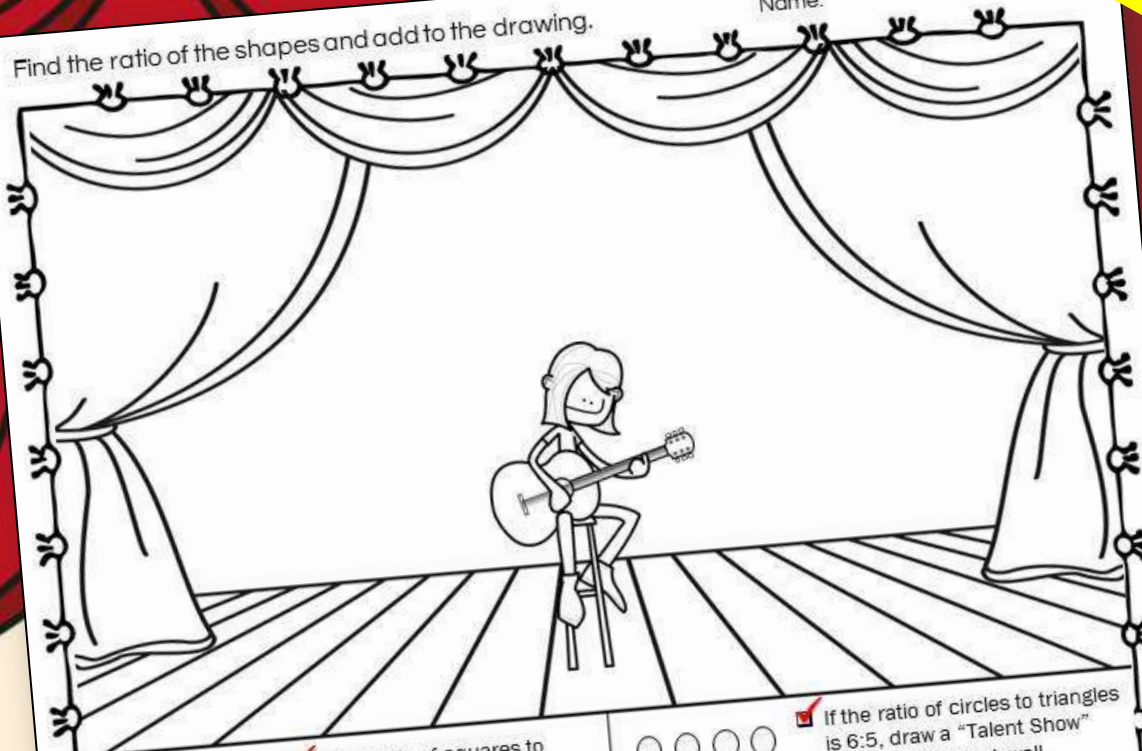
Challenge #2:

Create a new ratio problem and write two new drawing prompts. One must be correct, the second is your choice to make correct or incorrect.

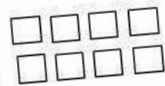
New Ratio Problem	Drawing Prompts

Find the ratio of the shapes and add to the drawing.

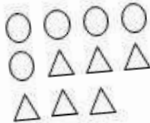
Name: _____



- ☒ If the ratio of squares to circles is 4:3, draw a headset style microphone on the boy.
- ☒ If the ratio of squares to circles is 4:7, draw a microphone on a stand.



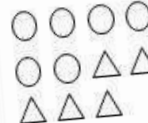
- ☒ If the ratio of triangles to squares is 8:2, draw a hat on the boy.
- ☒ If the ratio of triangles to squares is 2:8, draw a bow tie on the boy.



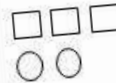
- ☒ If the ratio of circles to triangles is 4:6, draw a person peeking out from behind the curtain.
- ☒ If the ratio of circles to triangles is 5:6, draw a scarf on the neck of the guitar.



- ☒ If the ratio of stars to circles is 1:4, draw a singer on stage.
- ☒ If the ratio of stars to circles is 1:5, draw another guitarist on stage.



- ☒ If the ratio of circles to triangles is 6:5, draw a "Talent Show" poster on the back wall.
- ☒ If the ratio of circles to triangles is 5:6, draw a drummer on stage.



- ☒ If the ratio of squares to circles is 3:2, draw two stage lights near the ceiling.
- ☒ If the ratio of squares to circles is 3:5, draw three stars hanging from the ceiling.



- ☒ If the ratio of stars to triangles is 4:2, draw a keyboard player on stage.
- ☒ If the ratio of stars to triangles is 8:3, draw music notes coming from the original guitar.



- ☒ If the ratio of squares to stars is 3:5, draw three roses laying on stage.
- ☒ If the ratio of squares to stars is 3:4, draw a giant music note on the wall.

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Thank you for previewing!

Please contact me at activatededucation@gmail.com if you have any questions about this resource.

Thank you!



Click for my
TpT Store!

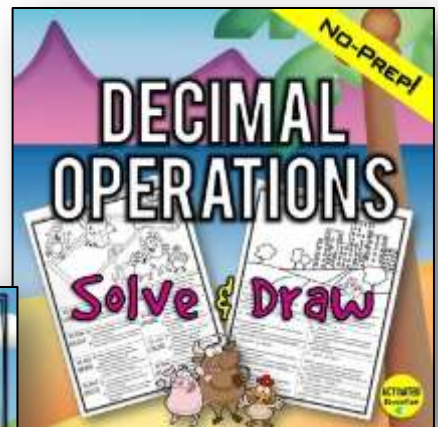
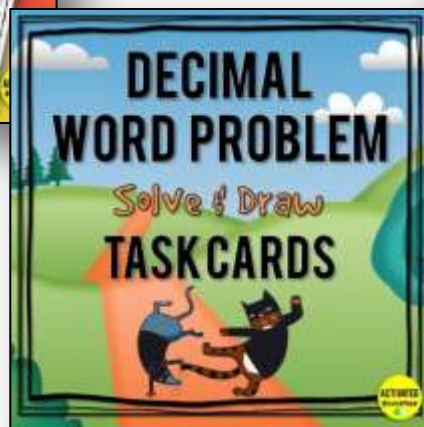


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